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THE

BRITISH FLORA:

COMPRISING THE

PHÆNOGAMOUS OR FLOWERING PLANTS,

AND THE FERNS.

The Seventh Edition,

WITH ADDITIONS AND CORRECTIONS,

NUMEROUS FIGURES ILLUSTRATIVE OF THE UMBELLIFEROUS PLANTS, THE COMPOSITE PLANTS, THE GRASSES, AND THE FERNS;

BY

SIR WILLIAM JACKSON HOOKER,

K.H. D.C.L. OXON. LL.D. F.R.A. & L.S.;

AND DIRECTOR OF THE ROYAL BOTANIC GARDENS OF KEW;

AND

GEORGE A. WALKER ARNOTT,

LL.D. F.L.S. & R.S.E.,

AND REGIUS PROFESSOR OF BOTANY IN THE UNIVERSITY OF GLASGOW.

LONDON:

LONGMAN, BROWN, GREEN, AND LONGMANS.

1855.

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—— " Call the vales, and bid them hither cast
Their bells and flow'rets of a thousand hues."

TO

WILLIAM BORRER, ESQ., F.L.S., &c.

OF

HENFIELD, SUSSEX.

DEAR SIR,

WE have much pleasure in dedicating to you the Seventh Edition of the "British Flora." No one, we formerly remarked, has a critical knowledge of British plants superior, and scarcely any equal, to your own; and we desire thus again to testify how much, on many occasions, we have profited by the numerous notes and observations you have kindly communicated to us.

That the uninterrupted friendship which has subsisted for so many years between us, may continue during the remainder of our lives, is the sincere wish of,

Dear Sir,

Your faithful and affectionate

Fellow-labourers,

THE AUTHORS.

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INTRODUCTION.

THE object originally contemplated in preparing a new *Flora of the British Islands*, was of a twofold nature: 1stly, to provide the young Student with a description of our native plants, arranged according to the simplest method; and, 2dly, to afford to the more experienced Botanist a Manual, that shall be useful in the field as well as in the closet. In regard to the first object, the experience of nearly an hundred years has proved to every unprejudiced mind that no system can be compared to that of the immortal Swede, for the *facility* with which it enables any one, hitherto unpractised in Botany, to ascertain the genus of some previously known plant. And as to the second, almost every collector in this country had been so habituated to the Linnæan method by the labours of Sir J. E. Smith, that to have presented any other arrangement would have been of no avail.

In the first four editions of this Flora, therefore, the Linnæan method was followed; but in order to accustom the reader, by degrees, to the natural system, an Appendix was given—at first brief, but gradually extended as new editions were called for—in which the Orders of Jussieu were characterized, so far at least as related to British plants. The more easy is the commencement of a study rendered, the more votaries will be drawn to it; and though they should attain to no further knowledge of a Natural Method than has been taught by the imperishable writings of a Linnæus and of a Smith, yet let them be assured that in plants, taken individually, and in an

isolated manner, there are subjects that will give ample scope for the employment of the talents of the greatest philosophers; in the due contemplation of which they may themselves derive both pleasure and advantage, and be the means of communicating them to others. Lyonnet acquired at least as much honour, and rendered as great service to mankind, by his intimate acquaintance with the anatomy and functions of the organs of a single caterpillar, as if he had spent his life in arranging all the known insects of the world according to a new and natural system. But the facility of any method has also its disadvantages, inasmuch as it may induce many to rest contented with a superficial view, instead of pursuing their inquiries in a more philosophical manner; and, as Mirbel has well remarked, "Ceux qui proscrivent l'usage des méthodes artificielles n'en ont point saisi le véritable esprit: ceux qui ne s'attachent qu'à ces classifications arbitraires, ignorent la beauté et la dignité de la science."

It was long unfortunately too much the practice for the one party, having devoted an exclusive attention to one or other of these methods, to decry that with which he was unacquainted, or at least the advantages of which he had not the good fortune to experience; and perhaps it is the unavoidable consequence of attending too much to trifling details as to the discrimination of species, where the characters are superficial and of minor importance, that the mind becomes unfitted for grappling with Botany properly so called, and for adapting itself to take a comprehensive view of the Vegetable Kingdom,

> "Where all is formed
> With number, weight, and measure . . . . . and
> Each . . . . . holds a rank
> Important in the plan of Him who fram'd
> This scale of beings; holds a rank, which lost
> Would break the chain, and leave behind a gap
> Which Nature's self would rue."

When a fifth edition was required, so great was the demand in this country for something more than the Linnæan method, that it was considered the time had arrived for the experiment being fully made of using the Jussieuan or Natural System for the general arrangement; while the Linnæan was introduced into the preface as an index to the other, for those who still cling to it, as well as for beginners. Accordingly the plan was followed, so advantageously employed by Beck in his *Flora of the Middle States of North America*, Mackay in his *Flora Hibernica*, and Koch in his *Flora Germanica*, of giving a synoptical Linnæan Table of the Classes, Orders, and Genera, referring to the place in the main body of the work where the species is described and arranged according to the natural method.

That this experiment was not unsatisfactory is demonstrated by the fact, that a sixth edition was called for in 1850, and after an interval of scarcely five years a new one has been again demanded. The Linnæan method is not, therefore, now reverted to. In the present edition, the reduced size of the page and of the type adopted in the last has been retained: by this means, not only are many useful observations retained, but synoptical tables are given of all the orders under each great division, and also similar tables of the genera under each order, the detailed characters of the orders being placed as formerly at the head of the genera, and those of the genus at the head of the species.

By those who desire fuller information respecting the *natural affinities* of Plants, especially as concerns universal Botany, the following works may be studied with advantage:—Dr. Lindley's *Introduction to Botany*, and his admirable *Vegetable Kingdom;* the 7th and last edition (by Sir W. J. Hooker) of Sir J. E. Smith's *Introduction to Botany;* the second part of Dr. Balfour's *Manual of Botany*, and the last part of his *Class Book of Botany*.

In most Floras of this country published previously to the *British Flora*, however excellent in other respects, either too much or too little space was devoted to the generic and specific descriptions and synonymes: in the one case swelling the book to a size which entails both expense on the purchaser, and difficulty in consulting the several volumes; in the other, reducing the technical characters to the shortest possible compass, so that they can scarcely be available, except to persons who are partially acquainted with the plant under examination, or with some of its near allies. Between these extremes a middle course was steered, by giving diagnostic remarks where, and where only, they appeared necessary for the discrimination of British species, or such very distinct foreign ones as might possibly be found in this country, and be confounded with them; while the synonymes, with few exceptions, were confined to those of the writer who first described the plant under the name adopted, to a good figure, and in general to a reference to a single Flora only of Great Britain. In the sixth and also in the present edition these rules have been slightly departed from. So many species have been, of late years, introduced from the Continent with seed-corn, or have escaped from our gardens, and so many of our former well-known species have been split into two or more, that it has been deemed proper to extend, in several instances, the characters of both the genera and species, introducing frequently a notice of the more minute parts which a practised botanist requires to examine, but which a student may omit, if his object be merely to attain a knowledge of the name, until he has advanced in the study. Rarely, however, have the genera or species been made to depend on such minute characters, and therefore few alterations have been proposed on the limits of either one or other from what will be found in former editions: when such alteration has taken place in the former, it is

solely from a desire of simplifying the generic characters.

What is a genus, or what is a species, is a point upon which scarcely two botanists are agreed at the present day. With regard to the former, however much it may be necessary to subdivide in a system comprehending the known plants of the whole world, so as to retain only a limited number of species in each genus, the same does not apply to a local Flora; and it is there preferable to constitute sections or subgenera, particularly when the limiting characters are inconstant, difficult, or obscure. A *species* cannot be so treated: it is formed, by our Maker, as essentially distinct from all other species as man is from the brute creation; it can neither for convenience be united with others, nor be split into several; but the difficulty is to ascertain what is such a primitive or natural species; and it is here so great a difference of opinion exists. Some pronounce a species to be distinct if it presents a different habit or appearance to the eye, particularly if this be constant, although often indefinable: others consider it a species, although exhibiting only a slight or no difference of aspect, provided that constant characters can be assigned to it, even although the differences are so minute that they can be detected only by the microscope; while a third party is of opinion that the validity of a species may be proved by the permanency of certain assigned characters under cultivation. The Authors are not inclined to believe that any one of these tests is sufficient. Of the first there are few advocates. The second provides us with *artificial* or *Book* species, arising from the morbid appetite for novelties inherent in the human race, which, when truly new species can no longer be detected in Europe, induces those, whose talents would be better devoted to the study of the numerous extra-European plants that lie undescribed in large herbaria, to split up previously received and well known species

into as many as constant characters can be devised for. As to cultivation, this is an excellent auxiliary, if properly applied; by it we may sometimes in a single year or two satisfactorily show that two supposed species are the *same;* but cultivation for many years cannot prove them *distinct.* The more we cultivate a plant, or the more it is limited in its wild state to a particular climate or place of growth, the more permanency is given to the peculiarities of what was originally derived from the same root, or even seed-vessel, of another apparently widely different form. Hence a rare mountainous plant may frequently be a mere alpine permanent state of some common lowland species, or a Swedish species the more northern race or state of a southern one; and it is from this cause that we see in our gardens so many called species (as in the genus *Achillea*), which cannot now be referred satisfactorily to any of the wild ones, although primarily derived from them. Knowing, then, this tendency of Nature to give permanency to a variety of forms obtained from one primitive species, there appears to be less violence done to her laws by combining too much, than by subdivision, unless where there is an anatomical or physiological distinction. But cultivation may be used for the reduction of species by proving the fertility of hybrids. Linnæus laid it down as a maxim that no hybrid, if the parents were *truly distinct* species, could produce perfect seed; or, where the seed so obtained might produce plants, these would die out in the second or third generation. The discovery, then, alluded to under *Geum rivale,* at p. 120.,—that fertile hybrids do exist between it and *G. urbanum,* and leading to the presumption that the parents are mere varieties of one species, although supposed hitherto to be so organically distinct as to be placed by many in two distinct sections,—shows that widely different structures may be exhibited by the same individual. Extensive experiments on this subject by cultivators will tend much to correct our ideas of species.

Linnæus took nearly all his specific characters from conspicuous parts, especially from the stem and foliage, and they were therefore natural; but at the present day we are prone to select minute ones: of these some are of trifling value, while others, sufficient to constitute subgenera, are connected with the habit of the plant, and should therefore not be neglected. Indeed the time may ere long arrive, when what are now called genera or subgenera will alone be considered species, and another Linnæus be requisite to reduce the chaos into order. In the meanwhile, we have endeavoured to steer a middle course: the species admitted in former editions are seldom reduced, unless where it was found that the characters were insufficient or variable; and as rarely has sanction been given to those which have been split off from other species, by the too-refined ingenuity of the German, Swiss, and modern Swedish botanists. If in some cases, particularly in the genus *Hieracium*, this neomania has been yielded to, it has been partly on account of the remonstrances of the Authors' friends who had opportunities of examining the living plant, and partly from the difficulty in ascertaining to which original species these aberrant forms ought to be referred.

The design of this work would not allow of so many stations being given for the rarer plants as could have been wished; and, indeed, the Authors have been rather anxious to indicate the range of the species, than the precise spot where any particular one is found. The admirable *Botanist's Guide* of Messrs. Turner and Dillwyn, the interesting *Remarks on the Geographical Distribution of British Plants*, the New *Botanist's Guide* and the *Cybele Britannica*, by H. C. Watson, Esq., Dr. T. Mackay's valuable *Flora Hibernica*, and the various local Floras which are now happily become exceedingly numerous, as well as the *Phytologist*, may, for information on this head, be consulted with great advantage.

Mr. J. E. Bowman, with his accustomed good judgment, suggested on a former occasion the propriety of erasing from the *British Flora* such plants as *Buffonia annua*, *Swertia perennis*, *Gentiana acaulis*, *Stipa pennata*, with some others universally acknowledged to be, at the present day, neither indigenous to the British Isles, nor naturalized among us; and our first impression was to follow his advice. But they were retained out of respect to the memory of Sir J. E. Smith, who saw reason to consider them British, and who introduced them as such not only into his *Flora Britannica*, but into *English Botany* and the *English Flora*. In the present edition the same motives have induced the Authors to permit them to remain, except in one or two instances, where there are grounds to believe that the original specimen was obtained from a garden, or that one plant had been mistaken for another. Those, however, which no longer exist in the given localities, as well as the many that have been or are daily becoming naturalized among us, whether by the agency of man or of birds, are branded with an asterisk (*); but there are also numerous ones, as the *Martagon Lily* and *American Touch-me-not*, which can have no claim whatever to a place in our Flora: in many cases, however, they have been briefly noticed at the close of an allied species or genus; and when the genus itself is not British, an abridged character of it has been sometimes introduced into the conspectus at the head of its proper order, especially where the plant is now so widely diffused, as the *Monkey-flower*, that it might otherwise puzzle a student. With regard to synonymes, they are even more abridged than in former editions; but the reader will always find a reference to *English Botany* (*E. B.*) and its *Supplement* (*E. B. S.*). Foreign references are almost entirely omitted, this *Flora* being applicable solely to the plants of Great Britain and Ireland, with the adjacent islands. Those who desire a further knowledge of the

various names given, as well as a full specific character, or such as will exclude all other known plants, wheresoever found, can only attain this by consulting a General *Flora*, such as De Candolle's *Prodromus*.

It may be well to remark here that the figures which precede the season of flowering of the plants in the descriptive pages, viz. ☉, ♂, ♃, and ♄, signify:

☉ (The Sun), implying that the plant is of annual duration, because the earth requires a year to perform its revolution round the sun.

♂ (Mars), a biennial plant, because that planet is two years in performing a similar revolution.

♃ (Jupiter), a perennial plant or root; because of the great length of time, nearly 12 years, required by that planet for such a revolution.

♄ (Saturn), a shrub or tree, which, living for a great number of years, is represented by a plant requiring nearly 30 years to revolve round the sun.

Any peculiar terms employed, particularly among the *Compositæ* and *Grasses*, are explained at the commencement of those orders.

This volume terminates with the *Ferns* and their allies, comprehending the Cryptogamic vascular plants: the rest of the *Cryptogamia*, or the *Cellulares* of De Candolle, have however been published uniformly with the fifth and previous editions of this work, constituting the second volume; and also with Sir J. E. Smith's *English Flora*, forming the fifth volume, and completing the Flora of the British Islands.

1st May, 1855.

CLASSES AND ORDERS

OF

THE LINNÆAN SYSTEM OF BOTANY.

Flowers perfect, each with Stamens and Pistils.

Class.		
1.	MONANDRIA	1 *Stamen* in each flower.
2.	DIANDRIA	2 *Stamens* —— ——
3.	TRIANDRIA	3 —— —— ——
4.	TETRANDRIA	4 —— —— —— —— equal in height.
5.	PENTANDRIA	5 —— —— —— —— ——
6.	HEXANDRIA	6 —— —— —— —— —— —— equal in height,
7.	HEPTANDRIA	7 —— —— —— —— —— —— or 3 long and 3
8.	OCTANDRIA	8 —— —— —— —— —— —— —— —— short.
9.	ENNEANDRIA	9 —— —— —— —— —— —— —— —— ——
10.	DECANDRIA	10 —— —— —— —— —— —— —— —— —— ——
11.	DODECANDRIA	from 12 to 19.
12.	ICOSANDRIA	20 or more, on the *calyx*.
13.	POLYANDRIA	20 or more, on the *receptacle*.
14.	DIDYNAMIA	4; 2 long and 2 short.
15.	TETRADYNAMIA	6; 4 long and 2 short. *Flowers cruciform.*
16.	MONADELPHIA	*Filaments* united at the base in one set.
17.	DIADELPHIA	*Filaments* united in two sets; *Flowers mostly papilionaceous.*
18.	POLYADELPHIA	*Filaments* united in three or more sets.
19.	SYNGENESIA	*Anthers* united; *Flowers compound.*
20.	GYNANDRIA	*Stamens* inserted on the *Pistil.*
21.	MONŒCIA	Stamens and Pistils in *separate Flowers* on the *same plant.*
22.	DIŒCIA	Stamens and Pistils in *separate Flowers* on *two separate plants.*
23.	POLYGAMIA	Stamens and Pistils *separate* in some flowers, *united* in others, either on the *same plant*, or on *two* or *three* distinct ones.
24.	CRYPTOGAMIA	*Fructification* concealed.

The Twenty-four Classes are subdivided into ORDERS

(See the characters of the Orders in the next page.

The *Orders* of the first thirteen Classes are founded on the number of *Styles* in each flower:

MONOGYNIA, 1 *Style*; DIGYNIA, 2; TRIGYNIA, 3; TETRAGYNIA, 4; PENTAGYNIA. 5; HEXAGYNIA, 6; HEPTAGYNIA, 7; OCTAGYNIA. 8; DECAGYNIA, 10; POLYGYNIA, many *Styles*.

The Orders of the 14th Class are two:

1. GYMNOSPERMIA, *Seeds* 4, apparently naked.
2. ANGIOSPERMIA, *Seeds* in a distinct seed-vessel.

The Orders of the 15th Class are two:

1. SILICULOSA, *Seeds* in a short Pod or Pouch.
2. SILIQUOSA, *Seeds* in a long Pod.

In the 16th, 17th, and 18th Classes, the Orders are founded on the number of *Stamens* in each set:

TRIANDRIA, 3; PENTANDRIA, 5; DECANDRIA, 10, &c., in each set.

The Orders of the 19th Class are three, and are founded on the structure of the flower, which is *compound*:

1. ÆQUALIS . . All the *florets* perfect.
2. SUPERFLUA . *Florets* of the *disk* perfect; of the *ray*, with Pistil only.
3. FRUSTRANEA . *Florets* of the *disk* perfect; of the *ray*, with neither Stamen nor Pistil.

The Orders of the 20th Class are founded on the number of the *Stamens*:

MONANDRIA, 1; DIANDRIA, 2, &c.

The Orders of the 21st and 22d Classes are founded on the number, union, and situation of the *Stamens*:

MONANDRIA, DIANDRIA, &c. MONADELPHIA, &c.

The Orders of the 23rd Class are three, and are:

MONŒCIA, *perfect flowers*, accompanied with others that are *barren* (without *pistil*), or *fertile* (without *stamens*), or *both*, all on *one plant*; DIÆCIA, the same on *two different plants*; TRIŒCIA, the same, on *three different plants*.

The Orders of the 24th Class are Natural Orders or Families:

1. FILICES[1]; 2. MUSCI; 3. HEPATICÆ; 4. LICHENES; 5. CHARACEÆ; 6. ALGÆ; 7. FUNGI.

[1] In the following pages considered a subclass; including *Polypodiaceæ*, *Osmundaceæ*, *Ophioglossaceæ*, *Lycopodiaceæ*, *Marsileaceeæ*, and *Equisetaceæ*.

SYNOPTICAL TABLE

OF

THE CLASSES, ORDERS, AND GENERA OF BRITISH PLANTS,

ARRANGED

ACCORDING TO THE LINNÆAN METHOD,

WITH REFERENCES TO THE PAGE WHERE THE SPECIES ARE DESCRIBED IN THE BODY OF THE WORK.

Class I. MONANDRIA.[1] 1 *stamen.*

Ord. I. Monogynia.[2] 1 *style.*

* *Leaves without stipules.*

1. Salicornia. Perianth single, inferior, tumid, fleshy, obscurely lobed. Style short, terminal; stigmas 2—3-fid. — Sea-side plants. p. 360.
2. Hippuris. Perianth single, superior, forming a very indistinct rim to the germen. Style and stigma simple. — Fresh-water erect plants. p. 148.
3. Zostera. Perianth 0. Stamens and pistils inserted alternately in two opposite rows upon one side of a thin flat spadix. Style bifid. — Marine plants with long leaves. p. 486.
4. Centranthus. Perianth double. Calyx a thickened margin at the top of the germen, at length unfolding into a pappus. Corolla spurred at the base. — Terrestrial plants. p. 200.

[1] From μονος, *one*, and ανηρ, here applied to the stamen. The other classes, as far as *Icosandria*, meaning 20 stamens, are likewise derived from the Greek numerals. *Polyandria* in the same way is from πολυς, *many*.

[2] From μονος, *one*, and γυνη, here made applicable to the pistil or style. When the styles are so short as not to be visible, the stigmas are reckoned.

** *Leaves with stipules adnate to their petiole.*

5. ALCHEMILLA. Perianth single, inferior, turbinate. Style lateral. Stigma entire. p. 134.

Ord. II. DIGYNIA. 2 *styles.*

6. CALLITRICHE. Flowers axillary, solitary. Fruit with 4 cells and seeds. — Leaves opposite. Aquatic or marsh plants. p. 381.
7. FESTUCA. Flowers imbricated, glumaceous. Fruit a caryopsis 1-seeded. — Leaves alternate. Terrestrial grasses. p. 556.

Class II. DIANDRIA. 2 *stamens.*

Ord. I. MONOGYNIA. 1 *style.*

* *Perianth double, inferior.*

† *Corolla monopetalous regular.*

1. LIGUSTRUM. Cor. 4-cleft. Berry 2-celled. p. 273.

†† *Corolla monopetalous, irregular. Seeds inclosed in a pericarp which forms one piece.*

2. VERONICA. Cor. 4-cleft, rotate, not spurred. Caps. 2-celled. p. 299.
3. LENTIBULARIACEÆ. Cor. ringent or personate, spurred. Caps. 1-celled. p. 335.

††† *Corolla monopetalous, irregular. Germen and fruit deeply 4-lobed or apparently formed of 4 naked seeds.*

4. LABIATÆ — (LYCOPUS and SALVIA). p. 315.

†††† *Sepals and petals 4.*

5. CRUCIFERÆ. p. 21.

** *Perianth double, superior.*

6. CIRCÆA. Petals 2. p. 147.

*** *Perianth single and inferior or none.*

7. FRAXINUS. Perianth 0. Caps. 2-celled, compressed, foliaceous at the extremity. — Trees. p. 273.
8. CRUCIFERÆ. Perianth, 4-leaved. — Herbaceous plants. p. 21.
9. SALICORNIA. Perianth turbinate, fleshy, obscurely lobed. Fruit, a 1-seeded utricle, included within the enlarged perianth. — Sea-side plants. p. 360.

10. LEMNA.[1] Perianth monophyllous, mebranaceous, urceolate. Fruit utricular.—Fresh-water minute floating plants. p. 477.
11. CYPERACEÆ. (Flowers glumaceous, imbricated. — Leaves with entire sheaths—CLADIUM and RHYNCHOSPORA). p. 488.

Ord. II. DIGYNIA. 2 *styles.*

12. CALLITRICHE. Flowers solitary, axillary. Fruit of 4 cells and seeds. — Leaves opposite. p. 381.
13. GRAMINEÆ. Flowers glumaceous, imbricated. Fruit a caryopsis, 1 seeded.—Leaves alternate with split sheaths — (ANTHOXANTHUM, HIEROCHLOE, and BROMUS. p. 521.

CLASS III. TRIANDRIA. 3 *stamens.*

Ord. I. MONOGYNIA. 1 *style.*

* *Perianth superior.*

1. VALERIANACEÆ. Perianth double. Cor. gibbous at the base, 5-cleft. Fruit 1-seeded. p. 200.
2. IRIDACEÆ. Perianth single, petaloid, 6-cleft. p. 438.

** *Flowers inferior (dry and chaffy).*

3. CYPERACEÆ. Flowers each of a single glume, several imbricated and forming a spikelet. Achene 1-seeded.—Leaves with entire sheaths. p. 488.
4. GRAMINEÆ. Flowers of 2 glumellas, with or without external glumes. Caryopsis 1-seeded. — Leaves with split sheaths — (NARDUS SESLERIA, and SPARTINA). p. 521.
5. JUNCUS. Perianth 6-partite. Caps. 3-celled, several-seeded. p. 459.

Ord. II. DIGYNIA. 2 *styles.*

6. GRAMINEÆ. p. 521.

Ord. III. TRIGYNIA. 3 *styles.*

7. MONTIA. Cal. of 2 leaves. Caps. solitary, 3-valved, 3-seeded. — stipules none. p. 151.
8. HOLOSTEUM. Cal. of 5 leaves. Caps. solitary, 1-celled, opening at the end with 6 teeth. — Stipules none. p. 70.
9. POLYCARPON. Cal. of 5 leaves. Caps. solitary, 1-celled, 3-valved. — Stipules membranous. p. 154.
10. TILLÆA. Cal. of 3 leaves. Carpels 3. — Stipules wanting. p. 156.

[1] This genus, placed here by Linnæus, is really monœcious, and the supposed perianth is a spatha with one barren and one fertile flower.

Class IV. TETRANDRIA. 4 *stamens equal in height.*

Ord. I. Monogynia. 1 *style.*

* *Perianth double. Corolla monopetalous, superior.*

1. DIPSACACEÆ. Flowers capitate, within a common involucre. Calyx double: one cup-shaped or membranaceous, the other minute or of bristles. Fruit 1-seeded. p. 202.
2. RUBIACEÆ.[1] Flowers solitary. Calyx entire or toothed at the margin. Fruit 2-seeded.—Leaves whorled. p. 194.

** *Perianth double. Corolla monopetalous, inferior. Seeds 2 or more.*

† *Germen deeply 4-lobed. Style from between the lobes. Fruit splitting into 4 achenes.*

3. LABIATÆ. Cal. 4-cleft. Cor. coloured. p. 315.

†† *Germen or fruit of one piece or covering, including several seeds. Style terminal.*

4. GENTIANACEÆ. Cal. 4-cleft. Cor. coloured. Stamens shorter than the corolla, alternate with its lobes. Caps. 1-celled, 2-valved at the apex. p. 274.
5. Plantago. Cal. of 4 pieces. Cor. scarious, the segments reflexed. Stam. much longer than the corolla. Caps. 2-celled, bursting all round transversely. p. 347.
6. Centunculus. Cal. 4-partite. Cor. coloured. Stam. shorter than the corolla, opposite to its lobes. Caps. 1-celled, bursting all round transversely. p. 343.

*** *Perianth double. Cor. of 4 petals.*

7. Epimedium. Cal. of 4 leaves. Pet. inferior, with an inflated nectary on the upper side. Stam. opposite to the petals. p. 14.
8. CRUCIFERÆ. Cal. of 4. leaves. Pet. inferior, without a nectary. Stam. opposite to the petals. p. 21.
9. Euonymus. Cal. 4-cleft, with a flat disk lining the base inside. Petals perigynous, inserted into the margin of the disk. Stam. alternate with the petals. Germen 3—4-celled. p. 91.
10. Cornus. Cal. of 4 teeth. Pet. without a nectary, superior. Germen 2-celled. p. 191.

**** *Perianth single.*

10a. Maianthemum. Perianth inferior, petaloid, 4-partite. Stamens inserted into the base of the segments of the perianth, and op-

[1] In some of the genera, especially *Galium*, the calyx forms so small a rim or margin to the germen as to be scarcely visible, its tubular part being incorporated with the germen.

posite to them. Germen 2-celled. — Leaves alternate, parallel-veined, without stipules. p. 445.

11. PARIETARIA. Perianth inferior, 4-fid campanulate. Stam. inserted upon the lobes of the perianth and opposite to its segments. Fruit 1-seeded. — Leaves netted-veined, with minute stipules. p. 384.
12. ALCHEMILLA. Perianth inferior, 8-cleft, the four alternate and outer segments the smallest. Stam. inserted into the mouth of the perianth, alternate with its larger lobes. Germen 1-seeded. — leaves alternate, with conspicuous stipules adhering to their petiole. p. 134.
13. SANGUISORBA. Perianth inferior, 4-lobed, with 4 scales or bracteas at the base. Stam. inserted into the mouth of the perianth, opposite to its lobes. Germen 1-seeded. — Leaves alternate, with conspicuous stipules adhering to their petiole. p. 135.
14. ISNARDIA. Perianth superior, its limb 4-partite. Stamens inserted at the bottom of the limb of the perianth, and opposite to its leaves. Germen 4-celled. Capsule many-seeded. — Leaves opposite, without stipules. p. 146.
15. THESIUM. Perianth superior, the limb 4-cleft. Stamens inserted at the base of the lobes of the perianth, and opposite to them. Germen 1-celled. Fruit drupaceous, 1-seeded. p. 372.

Ord. II. DIGYNIA. 2 *styles.*

* *Perianth double. Leaves opposite or none.*

16. BUFFONIA. Cal. of 4 leaves. Cor. of 4 petals. — Leaves opposite. p. 64.
17. GENTIANA. Cal. 4 cleft. Cor. monopetalous, 4-cleft. Capsule 1-celled, many-seeded, 2-valved at the apex. — Leaves opposite. p. 277.
18. CUSCUTA. Cal. 4-cleft. Cor. monopetalous, 4-cleft. Capsule 2-celled, 4-seeded, opening transversely. — Leaves wanting. p. 281.

** *Perianth single. Leaves alternate with adnate stipules.*

19. ALCHEMILLA. Perianth 8-cleft; stamens alternate with its inner lobes. p. 134.
20 SANGUISORBA. Perianth 4-cleft; stamens opposite to its lobes. p. 135.

Ord. III. TETRAGYNIA. 4 *styles.*

21. CARYOPHYLLACEÆ. Cal. of 4 leaves. Pet. 4, or none. Filaments conspicuous. Caps. 1-celled, several-seeded. — Leaves opposite. p. 54.
22. RADIOLA. Cal. of 4 leaves, united up to their middle, each

mostly 3-cleft. Pet. 4. Caps. of 8 cells, 8 valves, and 8 seeds. p. 74.

23. TILLÆA. Cal. of 4 leaves. Pet. 4. Capsules 4. p. 156.
24. ILEX. Cal. 4-toothed. Cor. rotate, 4-cleft. Stigmas 4, sessile. Fruit fleshy, including 4 one-seeded stony nuts. p. 272.
25. POTAMOGETON. Perianth single, of 4 scales. Anthers sessile. Pistils 4. Achenes 4, sessile. p. 478.
26. RUPPIA. Perianth 0. Pistils 4. Achenes 4, pedicellate. p. 485.

CLASS V. PENTANDRIA. 5 *stamens.*

Ord. I. MONOGYNIA. 1 *style.*

* *Perianth double, inferior. Cor. monopetalous. Germen deeply 4-lobed: style from between its lobes. Fruit splitting into 4 achenes.*

1. BORAGINACEÆ. p. 282.

** *Perianth double, inferior. Cor. monopetalous. Germen or fruit of one piece or covering, including several seeds: style terminal.*

† *Stamens opposite to the segments of the corolla.*

2. PRIMULACEÆ. Germen and caps 1-celled, with several seeds upon a globular free central placenta. p. 338.

†† *Stamens alternate with the lobes of the corolla.*

3. GENTIANACEÆ. Germen and caps. 1-celled, with several parietal seeds. Anthers straight. p. 274.
4. ERYTHRÆA. Germen and caps. 2-celled, linear, many-seeded. Anthers at length spirally twisted. p. 276.
5. SOLANACEÆ. Germen and fruit 2- or half 4-celled, many-seeded. Stamens upon the cor.: fil. glabrous: anthers straight. p. 291.
6. VERBASCUM. Germen and capsule 2-celled, many-seeded. Stam. upon the cor.: fil. all or 3 of them hairy: anthers straight. p. 313.
7. CONVOLVULACEÆ. Germen 1—2-celled, with 4 seeds at its base. Caps. 1—2-celled, 2—4-seeded. Cor. campanulate, plaited in bud. Stam. upon the corolla: anthers straight. Stigmas 2. p. 280.
8. POLEMONIUM. Germen and caps. 3-celled, 3-valved. Cor. rotate. Stam. upon the mouth of the corolla: anthers straight, Stigmas 3. p. 279.
9. AZALEA. Germen and caps. 2—3-celled, many-seeded, Cor. shortly campanulate. Stam. free, or nearly so, from the corolla: anthers straight. p. 268.

10. VINCA. Fruit of 2 erect follicles. Cor. salver-shaped, the segments spirally imbricated in bud. Stam. upon the corolla: anth. straight. p. 274.

*** *Perianth double, wholly or half superior. Cor. monopetalous.*

† *Stam. opposite the lobes of the cor. and inserted upon its tube.*

11. SAMOLUS. Cor. with 5 scales (imperfect stamens) alternate with its lobes. p. 344.

†† *Stamens alternate with the lobes of the cor., and free from it.*

12. LOBELIA. Style glabrous, with a ring of hairs below the stigma. Cor. irregular, cleft on the upper side. Anthers united, dissimilar. p. 260.

13. CAMPANULACEÆ. Style pubescent above the middle, without a ring of hairs below the stigma. p. 256.

††† *Stamens alternate with the lobes of the cor., and inserted upon it.*

14. CAPRIFOLIACEÆ. Cor. irregular (LONICERA), or regular (VIBURNUM). p. 192.

**** *Perianth double inferior. Cor. of several petals.*

† *Flowers regular. Stamen distant. Fruit without a beak.*

15. RHAMNUS. Cal. urceolate, 5-cleft. Pet. 5, small. Stam. opposite to the petals. p. 92.

16. EUONYMUS. Cal. flat, 5-cleft, having a flat disk within. Pet. roundish. Stam. alternate with the petals, inserted upon the disk. Caps. 3—5-celled, several-seeded.— Shrubs, without membranaceous stipules. p. 91.

17. PARONYCHIACEÆ. Cal. of 5 leaves, without a flat disk. Petals reduced to mere subulate scales or filaments. Stam. alternate with the petals. Fruit (minute) 1-seeded.—Herbaceous plants, with membranaceous stipules. p. 152.

‡‡ *Flowers regular. Stamens conniving into a tube. Fruit with a long beak.*

18. GERANIACEÆ. p. 82.

†† *Flowers very irregular, with a spur.*

19. IMPATIENS. Cal. and cor. together composed of 6 pieces, two outer and lateral ones deciduous. Germen 5-celled. Caps. of 5 elastic valves. p. 87.

20. VIOLA. Cal. of 5 leaves, extended at the base, persistent. Pet. 5. Germen 1-celled. Caps. 3-valved. p. 46.

***** *Perianth double, superior. Cor. of 5 petals.*

21. RIBES. Cal. 5-cleft, bearing the petals and the stamens. Style divided. Germen and berry 1-celled, many-seeded. p. 159.

22. Hedera. Cal. 5-toothed. Pet. and stam. inserted at the top of the germen. Germen 5-celled. Berry 3—5-seeded. p. 190.
23. Cornus. Cal. 5-toothed. Pet. and stam. inserted at the top of the germen. Germen 2-celled. Ovules solitary in each cell. p. 191.

****** *Perianth single.*

24. Glaux. Perianth inferior, campanulate, coloured, of 1 piece, 5-cleft. Stamens alternate with its lobes. p. 341.
25. PARONYCHIACEÆ. Perianth inferior, of 5-leaves. Stam. opposite to the leaves of the perianth, with 5 alternating subulate scales or filaments. p. 152.
26. CHENOPODIACEÆ. Perianth inferior, deeply 5-cleft. Stam. opposite to the segment of the perianth, without alternating filaments. Style 2—3-partite. p. 352.
27. Thesium. Perianth superior. Stam. opposite to the lobes of the perianth. p. 372.

Ord. II. Digynia. 2 *styles.*

* *Perianth double, inferior. Cor. monopetalous.*

28. GENTIANACEÆ. Germen 1-celled, many-seeded. Caps. 2-valved.—Leaves opposite. p. 274.
29. Cuscuta. Germen 2-celled, 4-seeded. Caps. bursting all round transversely at the base, 2-celled, with the cells 2-seeded. — Parasitical leafless plants with filiform twining stems. p. 281.

** *Perianth double superior. Pet.* 5. *Seeds* 2.[1]

30. UMBELLIFRÆ. p. 165.

*** *Perianth inferior. Pet.* 5 *or wanting.*

31. Staphylea. Cal. coloured, 5-cleft, with an urceolate disk at the base. Pet. 5. as long as the calyx. Caps. membranaceous, with several bony seeds.—Shrubs, with compound leaves and deciduous stipules. p. 88.
32. PARONYCHIACEÆ. Cal. of 5 leaves. Pet. resembling sterile filaments or scales. Fruit 1-seeded, not winged. — Herbaceous plants. Leaves opposite, with membranaceous stipules. p. 152.
33. Scleranthus. Perianth single, urceolate, contracted at the mouth. Stam. upon the throat of the perianth. Fruit 1-seeded, covered by the hardened perianth, not winged.— leaves opposite, without stipules. p. 362.
34. CHENOPODIACEÆ. Perianth single, herbaceous, 5-cleft or 5-parted. Stam. inserted into the base of the perianth.

[1] In this division so much of the calyx is incorporated with the germen, and so minute are the segments or free portion of the limb, that at first sight, as in *Rubiaceæ*, belonging to the second division of Cl. IV. Ord. I, it would appear as if there were no calyx.

Fruit covered by the perianth, 1-seeded, not winged — Stipules none. p. 352.

35. Polygonum. Perianth single, coloured, 5-parted. Stam. inserted at the base of the perianth. Achene 1-seeded, wingless. — Herbaceous plants, with alternate leaves and sheathing stipules. p. 363.

36. Ulmus. Perianth single, 4—6-cleft. Fruit longer than the perianth, compressed, winged all round (a *samara*), 1-seeded. — Trees, with alternate leaves and minute stipules. p. 386.

Ord. III. Trigynia. 3 *styles.*

* *Flowers superior. Cor. monopetalous, 5-lobed.*

37. Viburnum. Berry usually 1-seeded. — Leaves simple. p. 193.

38. Sambucus. Berry 3—4-seeded. — Leaves pinnate. p. 192.

** *Flowers inferior.*

† *Perianth double. Petals 5.*

39. Tamarix. Stigmas sessile, feathery. Caps. 1-celled, 3-valved, with many comose seeds. p. 150.

40. PARONYCHIACEÆ. Fruit with one naked seed. — Leaves with membranous stipules—(Corrigiola and Polycarpon). p. 152.

41. CARYOPHYLLACEÆ. Caps. 1-celled, with several naked seeds. — Leaves without stipules — (Stellaria and Holosteum). p. 55.

†† *Perianth single.*

42. CHENOPODIACEÆ. Perianth herbaceous. Stipules wanting.—(Chenopodium and Suæda). p. 353.

43. Polygonum. Perianth coloured. Stipules sheathing. p. 363.

Ord. IV. Tetragynia. 4 *styles.*

44. Parnassia. Cal. deeply 5-cleft. Petals 5. Nectaries 5, heart-shaped, fringed with globular-headed filaments. Capsule 1-celled, 4-valved, each valve bearing a longitudinal linear receptacle with numerous seeds. p. 51.

Ord. V. Pentagynia. 5 *styles.*

* *Stamens inserted upon the base of the petals. Cal. of* 1 *piece.*

45. PLUMBAGINACEÆ. Cal. funnel-shaped, plaited, dry and membranaceous. Pet. 5, united at the base, bearing the stamens. Caps. 1-seeded, invested by the calyx. p. 344.

** *Stam. inserted upon the receptacle, free from the cal. and petals. Cal. of* 5 *leaves or* 5*-partite.*

46. Linum. Pet. 5, entire. Germen and Caps. globose, mucronate, with 10 valves, 10 cells, and 10 seeds. p. 74.

47. Spergula. Pet. 5, entire. Germen and Caps. 1-celled. many-seeded. p. 155.
48. Cerastium. Pet 5, bifid. Germen and Caps. 1-celled, many-seeded. p. 71.

**** Stam. and petals inserted upon the calyx.*

49. Sibbaldia. Cal. in 10 alternately large and small segments. Achenes 5, in the bottom of the calyx. p. 133.

Ord. VI. Hexagynia. 6 *styles.*

50. Drosera. Cal. 5-cleft. Pet. 5. Caps. 1-celled, 3-valved, many-seeded.—Leaves clothed with glandular hairs. p. 50.

Ord. VII. Polygynia. *Many styles.*

51. RANUNCULACEÆ. Stam. inserted upon the receptacle, free from the calix. Cal. leaves distinct. p. 3.
52. Sibbaldia. Stam. inserted upon the calyx. Cal. 10-cleft. p. 133.

Class VI. HEXANDRIA. 6 *stamens, equal in height, or* 3 *longer than the others.*

Ord. I. Monogynia. 1 *style.*

** Flowers complete, having a double perianth (Cal. and Cor.). Dicotyledonous plants. Leaves netted-veined.*

1. Berberis. Cal. of 6 deciduous leaves. Pet. 6, each with 2 glands at the base. Berry 2—3-seeded. p. 14.
2. Frankenia. Cal. of 1 piece, tubular. Pet. 5, free from the calyx. Stamens mostly alternate with the petals. Caps. 1-celled, many-seeded. p. 53.
3. LYTHRACEÆ. Cal. of 1 piece. Pet. 6, inserted upon the calyx. Stam. alternate with the petals. p. 149.
4. PRIMULACEÆ. Cor. monopetalous, rotate, 6-partite, with the stamens inserted on it and opposite to its lobes.—(Trientalis and Lysimachia.) p. 338.

*** Perianth single, superior, petaloid. Monocotyledonous plants. Leaves parallel-veined.*

5. AMARYLLIDACEÆ. Flowers from a spatha, but not upon a spadix. p. 441.

**** Perianth single, inferior.*

† Stipules none.

6. Acorus. Flowers arranged closely upon a thick spadix. Perianth of 6 coloured scales. p. 476.

7. LILIACEÆ. Flowers not upon a spadix. Perianth petaloid, deciduous or marcescent, never coriaceous or hard when withered. p. 444.
8. GAGEA. Flowers corymbose, not upon a spadix. Perianth of 6 persistent coloured (yellow) leaves. Stam. glabrous. Anthers erect. p. 454.
9. NARTHECIUM. Flowers racemose, not upon a spadix. Perianth of 6 persistent (yellow) leaves, somewhat coriaceous and at length hardened. Filaments woolly. Seeds with an appendage at each end. p. 468.
10. JUNCACEÆ. Flowers not upon a spadix. Perianth dry and glumaceous, of 6 pieces. p. 458.
11. PEPLIS. Flowers axillary, not upon a spadix. Perianth herbaceous, campanulate, with 6 large and 6 small teeth.—Dicotyledonous plants with opposite leaves. p. 150.

†† *Leaves with sheathing stipules. Dicotyledonous plants. Leaves netted-veined.*

12. POLYGONUM. Flowers not upon a spadix. Perianth coloured, 5-cleft.—Leaves alternate. p. 363.

Ord. II. DIGYNIA. 2 *styles.*

18. OXYRIA. Perianth single, of 4 leaves, the 2 inner ones a little larger than the 2 outer. Achene with a broad membranaceous margin. p. 370.

Ord. III. TRIGYNIA. 3 *styles.*

* *Perianth single. Leaves verticillate, netted-veined, without stipules.*

14. PARIS. Perianth of 6 leaves, the three inner subulate. Anthers on the side of the filament. Stigmas simple. p. 444.

** *Perianth single. Leaves alternate, netted-veined, with sheathing stipules.*

15. RUMEX. Perianth of 6 leaves, the 3 inner afterwards enlarged and covering a triquetrous achene. Stigmas multifid. p. 367.

*** *Perianth single. Leaves alternate, or all radical, simple-veined, without stipules.*

16. TOFIELDIA. Perianth 6-parted with a small 3-partite involucre Styles short. Caps. 3—6, united up to the middle, many-seeded. p. 457.
17. SCHEUCHZERIA. Perianth of 6 leaves. Anthers elongated. Styles short. Caps. 3, inflated, 2-valved, 1—2 seeded. p. 472.
18. TRIGLOCHIN. Perianth of 6 concave deciduous leaves. Anthers lodged in the leaves of the perianth. Styles very short. Caps. 3—6, 1-seeded, united by a longitudinal column, from which they usually separate at the base. p. 471.
19. COLCHICUM. Perianth funnel-shaped, very long; limb campanulate, 6-parted, petaloid. Styles very long. Caps. 3, united at the base. p. 457.

**** *Perianth double. Leaves opposite.*

20. ELATINE. Cal. of 3 leaves, herbaceous. Pet. 3, coloured. Anthers terminal. p. 53.

Ord. IV. HEXAGYNIA. 6 *styles.*

21. ACTINOCARPUS. Germens and fruits combined at the base, spreading in a radiated manner, 2-seeded. p. 469.

Ord. V. POLYGYNIA. *Many styles.*

22. ALISMA. Achenes many, distinct, aggregated upon the receptacle, 1-seeded. p. 470.

CLASS VII. HEPTANDRIA. 7 *stamens.*

Ord. I. MONOGYNIA. 1 *style.*

1. PRIMULACEÆ. Cor. monopetalous, in 7 deep segments, regular and flat. Stam. opposite to the divisions of the corolla. Caps. 1-celled. Seeds attached to a globular free central receptacle — (TRIENTALIS and LYSIMACHIA). p. 338.

CLASS VIII. OCTANDRIA. 8 *stamens.*

Ord. I. MONOGYNIA. 1 *style.*

* *Perianth double, inferior.*

1. ACER. Cal. 5-cleft. Pet. 5. Germen 2-lobed, 2-seeded. Caps. 2, united at the base, each with a long winged membrane (*samara*), 1—2-seeded. p. 82.
2. CHLORA. Cal. of 8 segments, in a single row. Cor. of 1 piece, nearly rotate: the stamens alternate with its lobes. Germen 1-celled. Stigma 2—4-cleft. Caps. many-seeded. p. 278.
3. PRIMULACEÆ. Cal. 8-partite, in a single row. Cor. monopetalous, rotate, 8-partite, with the stamens inserted on and opposite to its lobes — (TRIENTALIS and LYSIMACHIA). p. 338.
4. MONOTROPA. Cal. and cor. of 4 pieces each. Germen 4-celled, many-seeded.—Leaves none. p. 271.
5. ERICACEÆ. Cal. of 4 leaves or deeply 4-cleft, sometimes with 4 similar outer pieces. Cor. of one piece. Stigma entire. Germen 4-celled. p. 264.

** *Perianth double, superior.*

6. VACCINIUM. Cor. of one piece, 4-cleft. p. 261.
7. ONAGRACEÆ. Petals 4. p. 143.

*** *Perianth single, inferior.*

8. Daphne. Perianth usually coloured, 4-cleft, bearing the stamens. Gemen 1-seeded. p. 371.
9. Monotropa. Perianth of 4 pieces, with as many external alternating bracteas. Stam. free from the perianth. Germen 4-celled, many-seeded.—Leaves none. p. 271.

Ord. II. Digynia. 2 *styles.*

10. Polygonum. Perianth single, inferior, coloured, 5-parted. Germen 1-seeded.—Leaves alternate, with sheathing stipules. p. 363.
11. Scleranthus. Perianth single, inferior, urceolate, contracted at the mouth; tube hard and coriaceous; limb 4-cleft. Germen 1-seeded.—Leaves opposite, without stipules. p. 362.
12. Chrysosplenium. Perianth single, half-superior, spreading. Germen many-seeded.—Leaves without stipules. p. 165.

Ord. III. Trigynia. 3 *styles.*

13. Polygonum. Perianth single, inferior, in 5 deep, coloured, persistent segments. Fruit a 1-seeded achene. p. 363.

Ord. IV. Tetragynia. 4 *styles.*

14. Paris. Perianth inferior, of 8 leaves; 4 inner very narrow. Cells of the anthers 2, fixed one on each side of the middle of a subulate filament. Berry 4-celled. p. 444.
15. Adoxa. Cal. half-superior, 3-cleft. Cor. 4-cleft. Anthers terminal, 1-celled. Berry 4-celled. p. 190.
16. Elatine. Cal. inferior, of 4 pieces. Pet. 4. Germen 4-celled. Caps. 4-valved. p. 53.
17. Mœnchia. Cal. inferior, of 4 pieces. Pet. 4. Germen 1-celled. Caps. opening by 8 teeth at the top. p. 70.

Class. IX. ENNEANDRIA. 9 *stamens.*

Ord. I. Monogynia. 1 *style.*

1. PRIMULACEÆ. Perianth double. Cal. 9-parted. Cor. rotate, 9-parted. Caps. 1-celled, several-seeded. p. 338.

Ord. II. Hexagynia. 6 *styles.*

2. Butomus. Perianth single, coloured, 6-parted, inferior. Caps. 6, many-seeded. p. 468.

Class X. DECANDRIA. 10 *stamens.*

Ord. I. Monogynia. 1 *style.*

* *Germen superior.*

† *Fruit with a long beak, its cells* 1*-seeded. Stam. conniving into a tube.*

1. Geranium. Fruit with a long beak. p. 83.

†† *Fruit without a beak, its cells many-seeded. Stam. distant.*

2. Monotropa. Perianth single, of 5 leaves, cucullate at the base (petals ?), with as many alternating bracteas (cal.-leaves ?). Anthers 1-celled, 2-lipped.—Leaves none. p. 271.
3. PYROLACEÆ. Cal. 5-cleft. Pet. 5, sometimes connected at the base. Anthers opening with 2 pores. Seeds chaffy. — Leaves mostly radical. p. 269.
4. ERICACEÆ. Cal. deeply 5-cleft. Cor. of 1 piece, ovate or campanulate, 5-cleft. Seeds not chaffy. — Shrubby, leafy plants. p. 264.

** *Germen inferior.*

5. Vaccinium. Cor. of 1 piece. p. 261.

Ord. II. Digynia. 2 *styles.*

* *Perianth single.*

6. Polygonum. Perianth inferior, 5-parted, coloured. Germen 1-seeded.—Leaves alternate with sheathing stipules. p. 363.
7. Scleranthus. Perianth inferior, of 1 piece, contracted at the mouth ; limb 5-cleft. Germen 1-seeded.—Leaves opposite, without stipules. p. 362.
8. Chrysosplenium. Perianth half-superior, limb somewhat coloured, 5-cleft. Germen many-seeded. Caps. with 2 beaks. p. 165.

** *Perianth double. Petals* 5.

9. Saxifraga. Cal. superior, or inferior, or half-superior, in 5 segments. Pet. sessile. Caps. sessile, with 2 beaks, 2-celled. p. 161.
10. CARYOPHYLLACEÆ. Cal. inferior, of one piece, 5-toothed. Pet. with long claws. Caps. stalked. p. 54.

Ord. III. Trigynia. 3 (*or sometimes* 4) *styles.*

11. Polygonum. Perianth single, petaloid. Germen sessile, 1-seeded, triquetrous.—Leaves alternate, with sheathing stipules. p. 363.
12. CARYOPHYLLACEÆ. § Sileneæ. Perianth double. Cal. of 1 piece, 5-toothed. Germen stalked, many-seeded.—Leaves opposite, without stipules. pp. 55, 56.
13. CARYOPHYLLACEÆ. § Alsineæ. Perianth single or double. Cal. 5-parted. Germen sessile, many-seeded.—Leaves opposite, without stipules. pp. 55—62.

14. SPERGULARIA. Perianth double. Cal. 5-parted. Germen sessile, many-seeded.—Leaves opposite, with membranaceous stipules. p. 154.

Ord. IV. PENTAGYNIA. 5 (*or sometimes* 10) *styles.*

* *Germens superior, distinct,* 5—10 *in each flower.*

15. SIBBALDIA. Cal. in 10 alternately large and small segments. Pet. 5, and the stam. inserted into the mouth of the calyx. Achenes 5—10, without a gland at their base. — Stipules adhering to the petiole. p. 133.
16. COTYLEDON. Cal. 5-parted. Cor. of 1 piece, tubular, 5-clefts inserted at the base of the germens. Caps. 5, each with a nectariferous scale or gland at its base. — Stipules none. p. 156.
17. SEDUM. Cal. in 5 (sometimes 4—8) deep segments, often resembling the leaves. Pet. 5, patent, inserted at the base of the germens. Caps. 5, each with a nectariferous scale at its base. — Stipules none. p. 157.

** *Germen superior, solitary in each flower.*

18. PARIS. Perianth of 10 leaves; 5 inner ones very narrow. Anther-cells attached near the middle of the filament. Germen 5-celled. p. 444.
19. OXALIS. Cal. 5-parted. Pet. 5, often united by the bases of their claws. Anthers terminal. Germen 5-celled. Seeds with an elastic skin.—Leaves alternate. p. 87.
20. SPERGULA. Cal. 5-leaved. Pet. 5. Germen 1-celled.—Leaves opposite, with membranaceous stipules. p. 155.
21. CARYOPHYLLACEÆ. § ALSINEÆ. Cal. 5-leaved. Germ. 1-celled.—Leaves opposite, without stipules. pp. 55. 62.
22. CARYOPHYLLACEÆ. § SILENEÆ. Cal. monophyllous, with 5 teeth. Pet. clawed.—Leaves opposite without stipules. pp. 55, 56.

*** *Germen inferior.*

23. ADOXA. Perianth double. Anthers 1-celled. p. 190.

CLASS XI. DODECANDRIA. 12 *(to* 18) *stamens.*

Ord. I. MONOGYNIA. 1 *style.*

1. ASARUM. Perianth single, 3-cleft, superior. p. 373.
2. LYTHRUM. Cal. inferior, tubular, with 12 teeth alternately smaller. Pet. 6, inserted upon the calyx. p. 149.

Ord. II. DIGYNIA. 2 *styles.*

3. AGRIMONIA. Cal. turbinate, covered with hooked bristles, 5-cleft, inferior. Pet. 5, inserted upon the calyx. p. 136.

Ord. III. TRIGYNIA. 3 *styles.*

4. RESEDA. Cal. 4—6-parted. Pet. more or less divided and unequal. Styles entire. Caps. of 1 cell, open at the top, with many seeds attached to its wall. p. 44.
5. EUPHORBIA. Perianth (a true involucre) single, campanulate. Styles bifid. Caps. 3-celled, with 3 seeds attached to the axis. p. 376.

Ord. IV. DODECAGYNIA. *Styles variable,* 4—12 *or more.*

6. SEMPERVIVUM. Cal. inferior, 12-cleft. Pet. 12, entire, regular. Caps. 12, distinct.—Stipules none. p. 156.
7. POTENTILLA. Cal. inferior, 8—10-cleft, the segments alternately smaller. Pet. 4—5, entire or notched, regular, and the stamens inserted upon the calyx. Achenes 4—18, distinct.—Leaves with stipules adhering to the petiole. p. 131.
8. RANUNCULUS. Cal. inferior, 5-cleft. Pet. 5, regular, and the stam. inserted on the receptacle. Achenes many, distinct. p. 7.
9. STRATIOTES. Perianth superior, 6-parted; 3 outer segments herbaceous, 3 inner petaloid. Germ. 6-celled. p. 423.

CLASS XII. ICOSANDRIA. 20 *or more stamens placed on the calyx.*

1. ROSACEÆ. Flowers regular. Cal. 4—5- or 8—10-cleft.—Leaves with stipules. p. 115.
2. STRATIOTES. Perianth 6-parted, regular; 3 outer segments herbaceous, 3 inner petaloid. Germen inferior, 6-celled.—Floating plants. p. 423.

CLASS XIII. POLYANDRIA. *Many stamens inserted upon the receptacle (free from the calyx and petals).*

Ord. I. MONOGYNIA. 1 *style.*

* *Flowers irregular.*

1. DELPHINIUM. Cal. coloured, upper leaflet produced at the base into a spur. Pet. 4; 2 upper ones with appendages included within the spur. p. 13.

** *Flowers regular. Petals* 4.

2. PAPAVERACEÆ. Cal. of 2 caducous leaves. Fruit a capsule or pod. p. 16.
3. ACTÆA. Cal. of 4 caducous leaves. Berry 1-celled.—p. 13.

*** *Flowers regular. Petals* 5.

4. HELIANTHEMUM. Cal. of 3 equal leaves, or 5 of which 2 are exterior and smaller; larger ones twisted in bud. p. 45.
5. TILIA. Cal. 5, partite; leaves similar, valvate in bud. p. 77.

**** *Flowers regular. Petals numerous.*

6. NYMPHÆACEÆ. p. 15.

Ord. II. PENTAGYNIA. *Styles variable, 2—9.*

7. STRATIOTES.[1] Germen inferior, 6-celled. p. 423.
8. RESEDA. Flowers irregular. Germen superior, solitary, 1-celled, soon open at the top between the short styles. Seeds attached to 3—4 parietal receptacles. p. 44.
9. HYPERICUM. Flowers regular. Germen superior, solitary, closed at the top.—Leaves opposite. p. 79.
10. RANUNCULACEÆ. Germens superior, several (3—6), sometimes united below, each 1-celled.—Leaves alternate p. 3.

Ord. III. POLYGYNIA. *Many styles.*

11. RANUNCULACEÆ. p. 3.

CLASS XIV. DIDYNAMIA.[2] *4 stamens; 2 longer than the other two.*

Ord. I. GYMNOSPERMIA.[3] *Germen or fruit deeply 4-lobed, or apparently of 4 naked seeds. Style from between the lobes.*

1. LABIATÆ. p. 315.

Ord. II. ANGIOSPERMIA.[4] *Germen entire, or slightly 2-lobed, containing several seeds, with a terminal style.*

2. VERBENA. Germen superior, 4-celled, with 1 seed at the base of each cell. Fruit splitting into 4 achenes.[5] p. 335.
3. LINNÆA. Germen inferior, 3-celled; 2 of the cells with many abortive seeds, one with a perfect seed. Berry dry, 1-seeded. p. 194.
4. OROBANCHACEÆ. Germen and caps. superior, 1-celled. Seeds attached to parietal receptacles.—Leafless plants. p. 294.

[1] We retain *Stratiotes* in the Class *Polyandria*, solely because it has been placed there by Linnæus, Smith, and some others; but the inferior germen shows its place to be *Icosandria:* there are, however, seldom more than 12 stamens with anthers, so that it ought rather to be looked for in *Dodecandria*, and from its being almost always dicœcious, Richard long ago removed it to *Diœcia Dodecandria.*

[2] From δις, *two*, and δυναμις, a *power*, or *superiority* of two stamens over the other two.

[3] From γυμνος, *naked*, and σπερμα, the *seed.*

[4] From αγγειον, a *vessel* or *capsule*, and σπερμα, the *seed.*

[5] This genus is placed by Smith and others in the order *Gymnospermia*. It is sometimes described as having the seeds inclosed in one thin membranous evanescent pellicle or capsule; but although we have not seen such, the terminal style appears to indicate the order *Angiospermia.*

5. SCROPHULARIACEÆ. Germen and caps. superior, 2- (or rarely 1-) celled. Seeds several, attached to the axis. Leafy plants. p. 298.

CLASS XV. TETRADYNAMIA.[1] 6 *stamens*, 4 *long and* 2 *short.*

1. CRUCIFERÆ. p. 21.

CLASS XVI. MONADELPHIA.[2] *Filaments combined, in one set.*[3]

Ord. I. TRIANDRIA. 3 *stamens.*

1. *SISYRHYNCHIUM. p. 439.

Ord. II. PENTANDRIA. 5 *perfect stamens.*

2. GERANIACEÆ. Style 1. Fruit beaked, separating at the base into 5 one-seeded capsules, each with a long awn. p. 82.
3. SOLANUM. Style 1. Fruit not beaked, fleshy, 2-celled, many-seeded. p. 293.
4. LINUM. Styles 5. Fruit not beaked, 10-valved, 10-seeded. p. 74.

Ord. III. DECANDRIA. 10 *stamens.*

5. GERANIUM. Cor. of 5 regular petals. Style 1. Fruit beaked, separating at the base into 5, 1-seeded capsules, each with a long naked awn. p. 83.
6. OXALIS. Cor. of 5 regular petals. Styles 5. Fruit 5-celled, not beaked. p. 87.
7. LEGUMINOSÆ. Cor. irregular, papilionaceous. Style 1. Legume 1-celled. p. 93.

Ord. IV. POLYANDRIA. *Many stamens.*

8. MALVACEÆ. Cal. double. Anthers 1-celled. p. 75.

CLASS XVII. DIADELPHIA.[4] *Filaments combined in two sets.*

Ord. I. HEXANDRIA. 6 *stamens.*

1. FUMARIACEÆ. Cal. of 2 small deciduous leaves. Pet. 4, one of them gibbous or spurred at the base. p. 19.

[1] From τετρας, *four*, and δυναμις, a *power*, or *superiority* in length of four over the other two stamens.

[2] From μονος, *one*, and αδελφος, *brotherhood;* one united set of stamens.

[3] In *Erodium* and *Geranium* the union of the filaments takes place only at the very base, and is with difficulty perceived.

[4] From δις, *two*, and αδελφος, *brotherhood*, stamens in two sets.

Ord. II. Octandria. 8 *stamens.*

2. Polygala. Cal. of 5 leaves, 2 of them wing-shaped and coloured. Pet. combined by the claws with their filaments, the lower one keeled. Capsule compressed, 2-celled, 2-seeded, p. 51.

Ord. III. Decandria. 10 *stamens.*

3. LEGUMINOSÆ. Flowers papilionaceous, p. 93.

Class XVIII. POLYADELPHIA.[1] *Filaments combined in more than two sets.*

Ord. I. Polyandria. *Many stamens.*

1. Hypericum. Cal. 5-partite or 5-leaved, inferior. Pet. 5. Stam. inserted on the receptacle. p. 79.

Class XIX. SYNGENESIA.[2] *Anthers united into a tube. Flowers compound (several together on the same receptacle, and within the same involucre.)*

1. COMPOSITÆ. p. 204.

Class XX. GYNANDRIA.[3] *Stamens situated upon the style or column, above the germen.*

Ord. I. Monandria, *one stamen;* and Ord. II. Diandria, *two stamens.*

1. ORCHIDACEÆ. Perianth 6-partite, irregular. Germen 1-celled. — Leaves simply veined. p. 424.

Ord. III. Hexandria. 6 *stamens.*

2. Aristolochia. Perianth tubular, oblique. Germen 6-celled. — Leaves netted-veined. p. 373.

[1] From πολυς, *many*, and αδελφος, many sets of stamens.
[2] From συγγενησις, implying union of the anthers.
[3] From γυνη and ανηρ, implying a union of the stamen and pistil.

Class XXI. MONŒCIA.[1] *Stamens and pistils in separate flowers on the same plant.*

Ord. I. Monandria. 1 *stamen.*

1. Euphorbia. Involucre of 1 piece, including several barren flowers and 1 fertile. Perianth none, or a very minute one to the fertile flower. Germen 3-lobed. Styles 3, cleft. Caps. 3-seeded. p. 376.
2. Callitriche. Bracteas 2 or none. Perianth none. Germen solitary, 4-lobed, indehiscent, with 4, 1-seeded cells. Styles 2, simple. p. 381.
3. Zannichellia. Involucre, spatha, and spadix none. Perianth of barren fl. none; of fertile single, of 1 leaf. Germens 4 or more, each with 1 undivided style. p. 486.
4. Zostera. Perianth none. Stamens and pistils inserted alternately in 2 rows upon one side of a thin flat spadix inclosed within a foliaceous spatha. Anthers sessile. Style bifid. Fruit dry. p. 486.
5. Arum. Perianth none. Stamens inserted about the middle, pistils on the lower part of a thick rounded spadix which is enveloped by a spatha convolute at the base. Fruit fleshy, many-seeded. p. 475.

Ord. II. Diandria. 2 *stamens.*

6. Callitriche. Flowers solitary. Fruit naked, 4-lobed, 4-seeded. Styles 2, simple. — Leaves opposite, sessile. p. 381.
7. Lemna. Spadix 0. Spatha urceolate, membranaceous, inclosing one barren and one fertile flower. Ovary 4-celled Style and stigma 1. — Minute floating, frondose plants. p. 477.
8. Carex. Flowers in spikes. Fruit 1-seeded, contained within an urceolate membranaceous perigynium. Style 1, with 2—3 stigmas. — Leaves alternate, sheathing. p. 499.

Ord. III. Triandria. 3 *stamens.*

9. CYPERACEÆ. Flowers in spikes, subtended by glumes. Achenes with 1 style and 2—3 stigmas. — Leaves parallel-veined. p. 488.
10. TYPHACEÆ. Flowers in spikes or capitate, without glumes. Pericarps indehiscent, with 1 style and stigma. — Leaves parallel-veined. p. 473.
11. Amaranthus. Perianth single, deeply 3-partite. Styles 2—3. Utricle of 1 cell, bursting all round transversely, 1-seeded. — Leaves netted-veined. p. 352.

Ord. IV. Tetrandria. 4 *stamens.*

12. Littorella. Barren fl.: Cal. 4-leaved. Cor. 4-fid, scarious.

[1] From μονος, *one*, and οικος, a *house*.

Stam. much longer than the corolla. — Fertile fl. : Cal. 0 (unless 3 bracteas be so called). Cor. urceolate. Style very long. Fruit 1-seeded. — Leaves radical. p. 349.

13. Alnus. Flower all in cylindrical catkins. — Barren fl.: Scale of the catkin 3-lobed, with 3 flowers. Perianth single, 4-partite. — Fertile fl.: Scale of the catkin subtrifid, with 2 flowers. Perianth 0. Styles 2. Fruit compressed, 2-celled. — Trees. p. 390.

14. Myrica. Flowers all in cylindrical catkins; scales entire, each with a single flower. Perianth none. Germen 1-celled, 1-seeded. Styles 2. Fruit globose. — Shrubs. p. 389.

15. Buxus. Flowers clustered, axillary. Perianth single, of 4 leaves, 2 opposite ones smaller, with 1—3 bracteas at the base. Styles 3. Caps. with 3 beaks, 3-celled, 6-seeded. — Trees or shrubs. p. 380.

16. Parietaria. Flowers clustered, axillary. Perianth single, campanulate or tubular, 4-cleft. Style simple. Stigma penicillate. Achene 1-seeded. — Herbaceous plants with leafy stems. p. 384.

17. Urtica. Flowers in spikes or clustered. Perianth single, of the barren flowers 4-leaved, of the fertile 2-leaved. Stigma sessile. Achene 1-seeded. — Herbaceous plants with leafy stems. p. 383.

18. Eriocaulon.[1] Flowers collected into a compact, scaly, stalked head. Perianth single, diaphanous. — Barren flowers in the centre. Perianth 4-cleft, the inner segments united nearly to their summit. — Fertile flowers in the circumference. Perianth deeply 4-partite. Style 1. Stigmas 2. Caps. 2-celled; cells 1-seeded. — Leaves all radical. p. 458.

Ord. V. Pentandria. 5 *stamens.*

19. Xanthium. Barren fl. : Involucre of few scales, with many small capitate flowers seated upon a common receptacle. Perianth single, obovate, 5-toothed. Anthers terminating a tube, which is inserted into the base of the perianth.—Fertile fl. : Involucre of 1 piece, prickly, 2-beaked, entirely inclosing two 1-seeded pistils, without a perianth. p. 256.

20. Atriplex. Perianth single, herbaceous, of the barren flowers 5-partite, of some or all the fertile 2-leaved. Style 2. Utricle superior, indehiscent, 1-seeded. p. 357.

Ord. VI. Polyandria. 6 *stamens or more.*

* *Flowers not in catkins*

† *Flowers destitute of spatha and spadix.*

‡ *Stipules none.*

21. Ceratophyllum. Flowers axillary. Perianth (an involucre?)

[1] Usually placed in *Monœcia Hexandria;* but the only British species has 4 stamens, and the other parts of the flower are in a binary (√), not ternary (∛), proportion.

single, inferior, multipartite. Stam. 16—20. Germen 1, superior. Style filiform and stigma simple. Fruit indehiscent, 1-seeded. p. 382.

22. MYRIOPHYLLUM. Flowers axillary or in a lax spike. — Barren fl. : Cal. inferior, of 4 leaves. Pet. 4, deciduous. Stam. 8.— Fertile fl. : Cal. of 4 leaves. Pet. 4. Germen inferior. Stigmas 4, sessile. Fruit splitting into 4 achenes. p. 148.

23. SAGITTARIA. Flowers solitary, peduncled. Perianth of 6 leaves; 3 outer herbaceous, 3 inner petaloid. Stam. numerous. Germens very numerous, collected into a head, each with one style and stigma. Achenes compressed. p. 471.

‡‡ *Leaves with stipules adhering to the petiole.*

24. POTERIUM. Flowers collected into a head, upper ones fertile. Perianth single ; of barren fl. in 4 deep segments, of fertile fl. tubular and contracted at the mouth with 4 deciduous teeth. Stam. 30—40 ; filaments very long, flaccid. Germens 2. Stigmas tufted. Achenes 2, invested with the hardened perianth. p. 135.

†† *Flowers with a spatha and spadix.*

25. ARUM. Spatha of 1 leaf, convolute at the base. Perianth 0. Spadix thick, naked above, with germens at its base and sessile stamens near the middle. Berry 1-celled, many-seeded. p. 475.

** *Barren flowers in catkins or lax spikes.*

26. CUPULIFERÆ. Fertile fl. solitary or aggregated or spiked. Perianth, when present, adhering to the rounded germen. Fruit solitary, or several together within a coriaceous or leafy involucre, not winged. p. 412.

27. BETULA. Fertile flowers in cylindrical catkins. Germen and fruit compressed, winged, not contained within an involucre. p. 389.

Ord. VII. MONADELPHIA. *Stamens united in one set.*

28. XANTHIUM. Barren fl. capitate, seated upon a common receptacle. Perianth single, 5-toothed. Filaments united into a compact tube, inserted into the bottom of the perianth, and bearing 5 anthers at the summit. — Fert. fl.: Involucre of 1 piece, prickly, 2-beaked, inclosing 2, 1-seeded pistils without a perianth. Stigmas protruded. p. 256.

29. PINUS. Perianth 0. — Barren fl. in crowded racemose catkins ; the scales peltate, bearing 2, 1-celled sessile anthers.—Fertile fl. in an ovate catkin; in scales closely imbricated, 2-flowered, afterwards hardened and forming a cone (*strobilus*). Pericarp none (except the scales of the cone). Seeds terminated by a long winged appendage, placed by pairs on the upper surface of each scale. p. 417.

CLASS DIŒCIA.[1] *Stamens and pistils in separate flowers and on different plants.*

Ord. I. MONANDRIA. 1 *stamen.*

1. NAJAS. Barren fl. within a spatha. Germen with 1 ovule. Leaves simple-veined. p. 486.
2. SALIX. Spatha none. Germen with many ovules. Leaves netted-veined. p. 391.

Ord. II. DIANDRIA. 2 *stamens.*

3. SALIX. Scales of the catkin single-flowered, imbricated, with 1—2 nectariferous glands at the base. Perianth 0. Stigmas 2, often cleft. Caps. 1-celled, 2-valved, many-seeded. Seeds comose. p. 391.

Ord. III. TRI-PENTANDRIA. 3—5 *stamens.*

* *Sterile flowers not in catkins, or with a perianth besides the scale of the catkin.*

4. EMPETRUM. Perianth and bracteas of many imbricating scales, of which the 3 inner are often regular, spreading, and petaloid. Filaments 3, long, inserted under the germen. Germen superior, globose. Style short. Stigma dilated, peltate, rayed. Fruit fleshy, 6—9-seeded. p. 374.
5. RUSCUS. Perianth single, of 6 leaves. Filaments combined into a tube, bearing 3 anthers at the summit. Style 1, surrounded by a tubular nectary. Stigma 1. Germen superior, 3-celled, 6-seeded. Fruit fleshy. p. 446.
6. VALERIANA. Cor. monopetalous. Stamens 3, upon the corolla. Germen inferior. Style 1. Stigma 3-fid. Fruit dry, 1-seeded, crowned with the calyx expanded into a pappus. p. 200.
7. VISCUM. Cal. obsolete. Pet. 4, of barren fl. ovate, fleshy, united at the base, and bearing each a single anther, adnate with the upper surface; of fertile fl. very minute. Germen inferior. p. 191.
8. RHAMNUS. Perianth double. Cal. urceolate 4-cleft. Pet. 4. Stam. 4, opposite to the petals; filaments inserted upon the throat of the calyx, ovary superior. p. 92.
9. HIPPOPHAE. Barren fl. collected into a small sort of catkin, each scale bearing a flower. Perianth single, of 2 roundish nearly distinct species. Anthers 3, linear, sessile.— Fertile fl. solitary. Perianth single, tubular, cloven at the summit. Germen superior. p. 388.
10. URTICA. Perianth single; of the barren fl. 4-leaved, of the fertile 2-leaved. Stam. 4. Stigma 1, sessile. Achene superior. p. 383.
11. HUMULUS. Barren fl. solitary. Perianth single, of 5 leaves. Stam. 5. Anthers with 2 pores at the extremity.— Fertile fl. in catkins, with large persistent concave entire scales. Perianth 0. Germen superior. Styles 2. Achene 1-seeded. p. 385.

[1] From δις, *two*, and οικος, a *house*.

12. Ribes. Perianth double. Pet. 5, inserted upon the calyx. Stam. 5. Germen inferior, 1-celled. Style bifid. Berry many-seeded.—Shrubs. p. 159.
13. Bryonia. Perianth double. Cor. 5-cleft. Stam. of 3 filaments and 5 anthers. Germen inferior. Style 3-fid. Berry several-seeded.—Herbaceous plants with tendrils. p. 151.

** *Barren and fertile flowers in catkins. Perianth* 0.

14. Myrica. Stam. 4. Styles 2. Scales of the fertile catkin at length somewhat fleshy, and adhering to the fruit, which is drupaceous and 1-seeded. p. 389.
15. Salix. Stam. 3—5. Styles bifid Scales of the ovary always dry or herbaceous, and free from the fruit, which contains many comose seeds. p. 391 .

Ord. III. Hexandria. 6 *stamens.*

16. Tamus. Perianth single, in 6 deep equal segments. Germen inferior. Stigmas 3. Berry 3-celled. p. 443.
17. Rumex. Perianth single, the 3 inner ones of the fertile fl afterwards enlarged, and covering the 1-seeded achene. Germen superior. p. 367.

Ord. IV. Polyandria. 8 *stamens or more.*

* *Flowers in catkins.*

18. Populus. Anthers 8 - 30, arising from a turbinate, oblique entire, single perianth. Caps. superior, 2-valved, with many comose seeds. p. 411.

** *Flowers scattered.*

19. Sedum. Cal. 4-partite. Pet. 4. Glands 4, emarginate. Stam 8. Germens 4. p. 157.
20. Mercurialis. Perianth single, 3-partite. Stam. 9—12. Anthers of 2 globose lobes. Germen superior. Styles 2. Caps 2-celled, 2-seeded. p. 376.
21. CARYOPHYLLACEÆ. Cal. tubular and 5-toothed, or 5-partite. Pet. 5. Stam. 10. Germen superior, several-seeded Styles 3—5.—Leaves opposite, without stipules—(Silene Lychnis, Honckenya). p. 55.
22. ROSACEÆ. Cal. 5—10 cleft. Pet. 5. Stam. numerous, inserted on the calyx. Styles numerous. Achenes or drupes many, superior, seated upon an elevated recepticle.—Leaves alternate, with adnate stipules—(Fragaria and Rubus) p. 116.
23. HYDROCHARIDACEÆ. Flowers spathaceous. Perianth 6-partite, or of 6 pieces: 3 outer herbaceous, 3 inner petaloid Stam. 9—12, or more. Germen inferior. Styles 3—6.—Floating plants. p. 422.

Ord. V. Monadelphia. *Stamens combined in one set.*

* *Perianth 6-leaved. Flowers not in catkins.*

24. Ruscus. Flowers on the leaves. Style and stigma 1. Berry 3-celled. p. 446.

** *Perianth none. Barren flowers in catkins.*

25. SALIX. Fertile fl. in catkins. Style 1. Stigmas 2. Caps. 2-valved, with many comose seeds. p. 391.
26. JUNIPERUS. Style and stigma 0. Seeds about 3, inclosed within several fleshy and at length united scales. p. 418.
27. TAXUS. Style and stigma none. Seed solitary, bony, contained in a fleshy cup. p. 419.

Ord. VI. POLYADELPHIA. *Stamens combined in three (or more) sets.*

28. BRYONIA. Filaments (or sets of stamens) 3; anthers 5. Fruit inferior, fleshy. p. 151.

CLASS XXIII. POLYGAMIA.[1] *Stamens and pistils separated or united, on the same or on different plants, and having the perianth (of some or all) of the pistillate flowers different from that of the sterile ones.*

Ord. I. MONŒCIA. *The two kinds of flowers on the same plant.*

1. ATRIPLEX. Barren and perfect fl.[2] Perianth single, 5-partite. Pistillate fl. Perianth single, of 2 valves. Fruit superior, 1-seeded, covered by the enlarged perianth. p. 357.

CLASS XXIV. CRYPTOGAMIA.[3] *Stamens and pistils not evident.*

This class corresponds with the third class of the natural arrangement, ACOTYLEDONES, which see, p. 577.

[1] From πολυς, *many*, and γαμος, in allusion to the stamens and pistils being sometimes separated in the same or in different plants.

[2] The supposed united fl. are by some considered to be only a second kind of pistillate flowers, and to be without fertile stamens, which would remove this genus to MONŒCIA.

[3] From κρυπτος, *concealed*, and γαμος, in reference to the obscure mode of fructification.

ADDITIONS AND CORRECTIONS.

Page	Line	
14.	5.	*For* "covered" *read* "crowned."
20.	14.	from bottom. *After* "persistent" *add* "Fumaria."
79.	12.	from bottom. In the Annals and Magazine of Natural History for Feb 1855, p. 92., Mr. Babington now admits the *Hypericum Anglicum* o the south of Ireland to be merely a state of *H. hircinum*, escaped fro cultivation; but he clings to the hope that there must be some ne glected British species according with *H. Anglicum* Bert.; and he no bestows that name on a plant gathered on the cliff above Falmout Harbour, Cornwall, by Mr. T. R. Polwhele, and on the banks of th Crinan Canal, in Argyleshire, near Culross, Perthshire, and nea Galway, by Dr. Balfour. What this is we are quite ignorant; if dis tinct from *H. Androsæmum*, as it appears to be, it is not likely to b indigenous; but we shall give the character and synonyms from Mr Babington's paper:—*H. Anglicum* Bert.; stem shrubby, 2-edged much branched; *peduncles* 2-*winged*, leaves sub-cordate-ovate rathe acute, cymes few-flowered, sepals broad unequal, petals twice as lon as the sepals, *styles exceeding the stamens*, capsules "oval." *Bert. Fl Ital.* viii. 310.—H. Androsæmum *E. B.* t. 1225.
89.	12.	from bottom; *insert before* "41. LORANTHACEÆ," "28. ONAGRACEÆ Stamens 2, alternate with the petals. Ovary inferior. Ovule solitary."
136.	25.	*For* "*Eupatoria*" *read* "*Eupatorium.*"
242.	3.	*For* "*Huds.*" *read* "*Sm.*"
414.	16.	from bottom. *After* "Spike" *add* "Q. sessiliflora *Salisb.*"
415.	9.	*For* "*sessilifolia*" *read* "*sessiliflora.*"
494.	4.	*Before* "*E. B.*" *insert* "Scirpus *L.*"
587.	14.	*After* "*E. B.* t. 1588" *add* "Aspidium *Sw.*"

THE BRITISH FLORA.

ARRANGEMENT ADOPTED IN THE BRITISH FLORA.

Page

I. DICOTYLEDONOUS, OR EXOGENOUS PLANTS, 1

1. THALAMIFLORÆ, petals several, distinct, and the stamens hypogynous. - - - - - - 1
2. CALYCIFLORÆ, corolla and stamens perigynous, or inserted into the calyx, - - - - - 89
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   1. Ovary adnate with the tube of the perianth. - 422
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2. GLUMACEÆ, flowers destitute of a perianth, but inclosed within imbricated alternate chaffy scales or bracteas. - 487

III. ACOTYLEDONOUS, OR FLOWERLESS PLANTS. - 577

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BRITISH FLORA.

CLASS I.

DICOTYLEDONOUS[1], OR EXOGENOUS, PLANTS.

CELLULAR and vascular. *Stem* formed of two distinct portions, *Wood* and *Bark;* the former containing pith in the centre, from which diverge the *medullary rays*, and increasing by new layers on the outside; the latter by new layers within. *Leaves* with the nerves much branched, and the veinlets reticulated. *Flowers* having the parts usually arranged in a quinary or quaternary manner. *Embryo* with two opposite *cotyledons*, rarely more and then verticillate.

SUB-CLASS I. THALAMIFLORÆ. (ORD. I.—XXIII.)

Petals many, distinct, and, as well as the stamens, inserted upon the receptacle (not upon the calyx); hence hypogynous (from ὑπο, *beneath*, and γυνη, the *pistil*).

CONSPECTUS OF THE ORDERS.[2]

A. *Flowers very irregular.*

a. *Leaves with stipules, ovary 1-celled.*

9. VIOLACEÆ. Stamens 5; anthers with a crest, more or less cohering. Ovary with 3 parietal placentas.

[26. LEGUMINOSÆ. Stamens 10, mono-diadelphous; anthers distinct Placenta 1, sutural.]

[1] From δις, *twice* or *double*, and κοτυληδων, the *cotyledon*.

[2] *The orders printed within brackets will be found described at length in some other sub-class, although some genera or species belong in character to the present one. On the other hand, the perigynous and apetalous genera and species will be noticed in the conspectus of some other sub-class. A similar remark applies to all the sub-classes.*

b. *Leaves without stipules.*

5. FUMARIACEÆ. Stamens 6, diadelphous. Fruit 1-celled.
11. POLYGALACEÆ. Stamens 8, diadelphous. Fruit 2-celled.
21. BALSAMACEÆ. Stamens 5; filaments distinct; anthers cohering. Fruit 5-celled.
7. RESEDACEÆ. Stamens 10 or more, inserted on a glandular irregular disk. Fruit 1-celled, with three parietal placentas.
1. RANUNCULACEÆ. Stamens numerous, without any conspicuous disk. Fruit of 1—5 follicles, each with one sutural placenta.

B. *Flowers regular, or nearly so.*

a. *Stamens* 20 *or more.*

1. RANUNCULACEÆ. Stamens distinct. Carpels 1 or more, sometimes cohering below, each with 1 style and 1 placenta. Leaves alternate.
4. PAPAVERACEÆ. Sepals 2, caducous. Petals 4. Style 1. Placentas 2 or more. Leaves without stipules.
3. NYMPHÆACEÆ. Sepals 4—6. Petals numerous. Stamens distinct. Style 1. Stigma rayed. Placentas several.
8. CISTACEÆ. Sepals 3, twisted in æstivation, with usually 2 outer ones. Petals 5, fugacious. Style 1. Placentas several.
18. HYPERICACEÆ. Sepals 5. Petals 5. Styles several (3—5). Leaves opposite, without stipules.
17. TILIACEÆ. Sepals 4—5, all in the same whorl and valvate in æstivation. Petals 4—5. Stamens distinct. Style 1. Placentas several. Leaves with stipules.
16. MALVACEÆ. Calyx valvate in æstivation. Petals 5. Stamens united into a column. Leaves with stipules.

b. *Stamens* 12 *or fewer. Calyx tubular.*

[67. PLUMBAGINACEÆ. Stamens as few as the petals, opposite to them and attached to their claws. Styles 5. Ovary 1-celled, with 1 ovule.]
12. FRANKENIACEÆ. Stamens, if as few as the petals, alternate with and free from them. Style 1, 2—3-cleft. Ovules several, attached to 3 parietal placentas.
14. CARYOPHYLLACEÆ, § SILENEÆ. Stamens twice as many as the petals. Styles 2—5. Ovules numerous, attached to a central or axile placenta.

c. *Stamens* 12 *or fewer. Calyx deeply divided, or sepals distinct.*

* *Carpels several, distinct.*

1. RANUNCULACEÆ. Carpels very numerous, in several rows.
[35. CRASSULACEÆ. Carpels in a single row.]

** *Carpels in a single row, solitary, or* 2—5 *combined.*

† *Ovary* 1-*celled, with a free central placenta bearing* 3 *or more ovules. Anthers not opening by recurved valves.*

[33. PORTULACEÆ. Sepals 2. Petals 5.
34. PARONYCHIACEÆ. Sepals and petals 4—5. Leaves with stipules.]
14. CARYOPHYLLACEÆ, § ALSINEÆ. Sepals and petals 4—5. Leaves without stipules.

†† *Placentas several, parietal, or cells of fruit* 1*-seeded. Anthers not opening by recurved valves.*

[31. TAMARICACEÆ. Placentas 3. Seeds comose.]
10. DROSERACEÆ. Placentas 3—4. Seeds not comose.
6. CRUCIFERÆ. Placentas 2, or apparently only 1. Style 1. Stamens usually tetradynamous.

††† *Ovary* 1*-celled, with* 1 *placenta. Anthers opening by recurved valves.*

2. BERBERIDACEÆ.

†††† *Ovary with* 2 *or more cells and axile placentas.*

§ *Petals imbricated in æstivation.*

19. ACERACEÆ. Style 1, bifid. Fruit 2-celled, 2—4-seeded, winged. Leaves opposite, exstipulate.
23. STAPHYLEACEÆ. Stamens 5, inserted below the margin of a large hypogynous disk. Styles 2—3. Ovary and wingless fruit 2—3-celled. Seeds globose, few, bony. Leaves pinnatifid, stipuled.
[37. SAXIFRAGACEÆ. Stamens 10. Styles 2. Ovary 2-celled. Fruit many-seeded, wingless. Leaves without stipules.
51. PYROLACEÆ. Stamens 8—10; anthers opening by pores. Style and stigma 1. Ovary 4—5-celled, many-ovuled. Leaves without stipules.
52. MONOTROPACEÆ. Stamens 8—10; anthers opening transversely. Style and stigma 1. Ovary 4—5-celled, many-ovuled. Leaves wanting.]
13. ELATINACEÆ. Styles 3—5. Ovary and fruit 3—5-celled. Seeds numerous, cylindrical, with a striated testa. Leaves entire, opposite, stipuled.

§§ *Petals convolute in æstivation.*

15. LINACEÆ. Stamens 4—5. Stigmas 3—5. Ovary 3—5-celled. Fruit 6—10-celled, 6—10-seeded. Leaves exstipulate, entire.
22. OXALIDACEÆ. Stamens 10. Styles 5. Ovary, 5-celled. Seed-coat fleshy, bursting elastically. Leaves alternate, exstipulate.
20. GERANIACEÆ. Stamens 10. Style 1. Stigmas 5. Ovary 5-celled. Fruit 5-celled, 5-seeded, with a long beak. Leaves stipuled.

ORD. I. RANUNCULACEÆ *Juss.*

Calyx of mostly 5, rarely 3 or 6, pieces or sepals, frequently deformed. *Petals* 5 or more, often deformed, sometimes wanting. *Stamens* usually numerous, rarely as few as the petals, and then alternate with them. *Anthers* adnate, mostly reversed. *Ovaries* 1 or many, distinct or cohering. *Fruit* mostly of several 1-seeded indehiscent *carpels* (*achenes*), or of 1 or more distinct or united *capsules* dehiscing along their inner margin (*follicles*), rarely a *Berry*. *Embryo* straight, in the base of a horny *albumen*. — Herbs or shrubs. Leaves *often divided, with more or less dilated stalks. Acrid and poisonous, some of them eminently so, especially* Aconitum.

* *Ovaries numerous, short, in several rows, 1-ovuled. Fruit of achenes.*

1. CLEMATIS. Calyx valvate or induplicate in æstivation. Petals 0.
2. THALICTRUM. Calyx imbricated in æstivation. Petals 0. Involucre 0.
3. ANEMONE. Calyx imbricated in æstivation. Petals 0. Involucre 3-leaved, usually distant from the calyx.
4. ADONIS. Petals 5—10, without a nectariferous pore.
5. MYOSURUS. Sepals prolonged at the base. Petals 5, with a nectariferous pore.
6. RANUNCULUS. Sepals not prolonged at the base. Petals with a nectariferous pore.

** *Ovaries elongated, many-ovuled. Carpels several-seeded. Stamens numerous.*

† *Stamens not arising from a glandular disk: anthers reversed (extrorse). Fruit of follicles.*

7. CALTHA. Petals 0.
8. TROLLIUS. Petals linear, flat.
8a. ERANTHIS. Petals small, tubular. Follicles stalked.
9. HELLEBORUS. Petals small, tubular. Follicles sessile.
10. AQUILEGIA. Petals 5, funnel-shaped, with a long spur.
11. DELPHINIUM. Upper sepal spurred at the base. Petals 4, irregular.
12. ACONITUM. Upper sepal helmet-shaped. Petals irregular.

†† *Stamens arising from a glandular disk: anthers introrse. Carpel solitary, baccate.*

13. ACTÆA. Petals 4, irregular.

††† *Stamens arising from a glandular disk: anthers introrse.. Follicles* 2—5.

14. PÆONIA. Petals 5—10, larger than the calyx, regular.

* *Ovaries (and fruit) short, 1-seeded.* (Gen. 1—6.)

1. CLÉMATIS *Linn.* Traveller's Joy.

Cal. of 4—6 sepals, with a valvate or induplicate æstivation. *Pet.* 0. *Stamens* and *Styles* numerous. *Achenes* terminated by a long, mostly feathery, awn.—Named from κλημα, the *shoot of a vine*, which the long branches somewhat resemble.

1. C. *Vitálba* L. (*common T.*); stem climbing, leaves pinnate, leaflets cordato-ovate inciso-lobate, petioles twining, peduncles rather shorter than the leaves. *E. B.* t. 612.

Hedges; abundant in a calcareous soil, in the middle and south of England. ♄. 6—9. — *Petioles* serve as tendrils. *Flowers* fragrant.

2. THALÍCTRUM *Linn.* Meadow-Rue.

Cal. of 4—5 sepals, imbricated in æstivation. *Cor.* 0. *Stamens*

numerous. *Styles* several. *Achenes* without awns (sessile, or nearly so, ribbed, usually acute at both ends, and *flowers* perfect, in the British species). *Involucre* none.—Named from θαλλω, to be *green* or *flourishing*.

1. T. *alpínum* L. (*alpine M.*); stem simple nearly leafless, raceme simple terminal, flowers drooping. *E. B.* t. 262.

Mountains in the north of England, Wales, and Scotland, frequent. ♃. 6, 7. — *Root-leaves* upon long stalks, biternate; *leaflets* roundish, crenate, or lobed, dark-green. *Stam.* 10—12. *Ovaries* 2—4. *Flowers* few. *Pedicels* in fruit recurved: they are straight in the two following.

2. T. *mínus* L. (*lesser M.*); glabrous or slightly pubescent, leaves 3—4-pinnate, leaflets roundish or wedge-shaped trifid and toothed glaucous beneath, panicle diffuse its branches alternate or whorled, flowers mostly drooping.—*α.* stem leafless at the base, petioles with inflexed auricles at the base, panicle leafless, achenes fusiform. *E. B.* t. 11.—*β.* stem leafy to the base, petioles with reflexed auricles, panicle leafy, achenes narrow oblong. T. majus *Sm.*: *E. B.* t. 611. T. flexuosum *Bernh.*—*γ.* stem leafy to the base, petioles with horizontal auricles, panicle leafless, achenes oval. T. saxatile *D. C.* T. Kochii *Fries*.

Stony pastures, especially in limestone or chalky countries. Sandhills on the coast, near S. Shields and Yarmouth; Scotland.—*β.* Principally in the north of England and in Scotland. *γ.* Cheddar, Somersetshire. ♃. 6, 7. — *Stem* usually zigzag, from one to two feet high, mostly glaucous, solid, or hollow particularly when luxuriant. Although we do not recognise the above as distinct species, we avail ourselves of the characters proposed by Mr. Babington to mark our varieties. *T. pubescens*, *fœtidum*, *calcareum*, &c., appear to be the pubescent or glandular states of it, and *T. nutans* Desf. a form with much-acuminated leaflets.

3. T. *flávum* L. (*common M.*); stem erect branched furrowed, leaves bipinnate, leaflets broadly obovate or wedge-shaped trifid, panicle compact subcorymbose, flowers erect. *E. B.* t. 367.—*β.* leaflets almost rotundate.

Banks of rivers and ditches and in moist meadows. Less frequent in Scotland, and principally found along the shores of the Clyde.—*β.* Isle of Bute. ♃. 6, 7.—*Stem* 2—3 ft. high. *Flowers* very numerous, yellow. Lobes of the *leaves* varying in breadth.

3. Anemóne *Linn.* Anemone.

Involucre of 3 divided leaves, more or less remote from the flower. *Cal.* petaloid, of 5—9 sepals, imbricated in æstivation. *Cor.* 0. *Stamens* and *Styles* numerous. *Achenes* pointed or

awned.—Named from *ανεμωνη*, and that from *ανεμος*, the *wind*; because the flowers are easily moved by the wind.

1. A. *Pulsatílla* L. (*Pasque-flower A.*); leaves as well as the involucre with doubly pinnatifid linear segments, flower inclined, sepals 6, achenes with long feathery awns. *E. B.* t. 51.

Dry chalky pastures, in several parts of England. ♃. 4, 5.—*Flowers* purple, externally silky, very handsome.

2. A. *nemorósa* L. (*Wood A.*); leaves ternate, leaflets lanceolate lobed and cut, involucre similar to them petiolate, stem single-flowered, sepals 6 elliptical, point of achenes not feathery. *E. B.* t. 355.

Moist woods and pastures, and on high mountains. ♃. 3—6.—*Flowers* white, tinged with purple outside.

3. A. * *Apennína* L. (*Blue Mountains A.*); leaves triternate, segments lanceolate cut and toothed, involucres petiolate ternate and cut, sepals 12—14, point of achenes not feathery. *E. B.* t. 1062.

Wimbledon woods, Surrey; near Harrow; Luton Hoe, Bedfordshire; near Berkhamstead, Hertfordshire; and Cullen, Banff. ♃. 4.—*Flowers* light and bright blue.

4. A. * *ranunculoídes* L. (*yellow Wood A.*); leaves ternate or quinate, leaflets subtrifid cut and toothed, involucres shortly stalked ternate cut and toothed, sepals 5—6 elliptical, point of achenes not feathery. *E. B.* t. 1484.

Woods, rare; King's Langley, Herts; and Wrotham, Kent. ♃. 4.—*Flowers* brightish-yellow.

4. Adónis *Linn.* Pheasant's Eye.

Cal. of 5 sepals. *Pet.* 5—10, without a nectary. *Stamens* and *Styles* numerous. *Achenes* without awns.—Name: its deep red colour suggested the idea of its being stained by the blood of *Adonis*.

1. A. * *autumnális* L. (*Corn P.*); petals concave connivent scarcely longer than the glabrous calyx, achenes reticulated collected into an ovate head, stem branched. *E. B.* t. 308.

Amongst corn, about London, Isle of Wight, Norfolk, Gloucestershire, Glasgow, and Dublin. ☉. 5—7, and partially till autumn.—*Leaves* thrice compound, with linear segments. *Petals* bright scarlet.

5. Myosúrus *Linn.* Mouse-tail.

Cal. of 5 sepals, prolonged at the base, imbricated in æstivation. *Pet.* 5, their *claws* tubular (nectariferous). *Stamens* 5. *Achenes* numerous, collected upon a very long columnar recep-

tacle.—Name μυς, μυος, a *mouse*, and ουρα, a *tail;* from the elongated receptacle or the germens of seed-vessels.

1. M. *mínimus* L. (*common M.*) *E. B.* t. 435.

Corn-fields and waste places in England, in a gravelly or chalky soil. North of Ireland. ☉. 4—6.—A small plant, from 2—6 inches in height. *Leaves* erect narrow, linear-spathulate, fleshy. *Scapes* slender bearing a single, small, greenish flower. *Receptacle* of *achenes* at first short, then lengthening to from 1—3 inches.

6. Ranúnculus *Linn.* Crowfoot, Spearwort.

Cal. of 5 (rarely 3) sepals, not prolonged at the base. *Pet.* 5 (rarely many), with a nectary at the base. *Achenes* without awns. [In the pore or nectary of the petals of this, and of *Myosurus*, we observe an affinity with the tubular petals of *Helleborus*, and even of *Trollius;* only, in the two latter, the petals are more altered in shape.]—Named from *Rana*, a *frog;* these plants delighting to grow where frogs abound.

** Achenes conspicuously transversely wrinkled. Petals white, nectary without a scale.*

1. R. *flúitans* Lam. (*River C.*); stem floating, leaves all submersed capillaceo-multifid, their segments very long and parallel, petals obovate much larger than the calyx, receptacle of fruit hispid. *E. B. S.* t. 2870.

Lakes, rivers, and canals, in deep water. ♃. 6, 7.

2. R. *circinátus* Sibth. (*rigid-leaved Water C.*); stem floating, leaves all submersed flat roundish capillaceo-multifid their segments spreading all in the same plane, petals obovate much larger than the calyx, receptacle of fruit hispid. *E. B. S.* t. 2869.

Lakes, ponds, and ditches. ♃. 6—8.—Whatever be thought of the last species we cannot believe this to be distinct from the following.

3. R. *aquátilis* L. (*common Water C.*); stem floating submersed, leaves capillaceo-multifid, their segments spreading in all directions and forming a globular mass, floating leaves trifid or tripartite (occasionally wanting) their lobes cut or crenated, stipule-like appendages of upper leaves adhering to the petiole, petals obovate (usually much) larger than the calyx, receptacle of fruit hispid.—*a.* receptacle globose, stigma round. *a.* petals large contiguous, floating leaves usually present. *E. B.* t. 101. (1. *heterophyllus*, achenes attenuated at the apex, upper margin curved.—2. *subpeltatus*, achenes rounded at the apex, upper margin nearly straight and terminated by the stigma) *b. trichophyllus*, petals small apart, floating leaves absent.—

β. receptacle ovato-conical, stigma ligulate, achenes attenuated towards the apex. (1. *confusus*, stamens longer than the head of achenes. R. confusus, *Godr.* 2. *Symei*, stamens short. R. Baudotii *Syme.*)

Lakes, ponds, and ditches. ♃. *Fl.* Spring and summer. — This chiefly differs from the next by the larger flowers. In the above varieties we have followed Mr. J. T. Syme, as by some they may be deemed distinct species. The true *R. Baudotii*, Godr. appears to us only another form of this variable species.

4. R. *tripartitus* DC. (*three-lobed Water C.*); stem floating, submersed leaves wanting or divided into capillary segments spreading in all directions, floating ones tripartite, their lobes triangular-obovate 2—4-cleft, stipule-like appendages of upper leaves almost free from the petiole, petals oblong (small) as short as or twice as long as the calyx, receptacle of fruit hispid. *E. B. S.* t. 2946.

Shallow ditches near Claremont House, Surrey; *H. Watson.* Haverfordwest, Pembrokeshire; *C. C. Babington.* ♃, or ☉? (*Borrer.*) 6, 7. — *Stamens* few, 5—10. Submersed *leaves* always absent in English specimens. In deference to our friend Mr. Borrer's opinion we have kept this and the last two species distinct: we ourselves, however, are not convinced that the differences hitherto observed are of more importance than to denote *perhaps* permanent varieties: the present one has small flowers and forms the transition to the two next, from which, along with all the preceding, it differs by the hispid receptacle. De Candolle himself was very doubtful as to its claims to rank as a species.

5. R. *cœnósus* Guss. (*Mud C.*); stem creeping or floating, leaves roundish kidney-shaped with 3—5 notched lobes, petals oblong about twice longer than the calyx, receptacle of fruit glabrous. R. Lenormandi *F. W. Schultz: E. B. S.* t. 2930.

Shallow water in various places in England; Sussex, Plymouth, Surrey, Needham Forest in Staffordshire Charnwood Forest in Leicestershire, and head of Coniston Water in Lancashire. Dumfries-shire and about Glasgow in Scotland. ♃. 6—8. — The *style* is said to be terminal in this species, lateral in the next: this is sometimes true, but is certainly not constant; and we cannot discover any other good grounds for keeping it distinct. About Glasgow it is principally met with in ditches where the temperature is raised by warm condensed steam from the engines of collieries, and where formerly *R. hederaceus* only occurred.

6. R. *hederáceus* L. (*Ivy C.*); stem submersed and throwing out roots or creeping, leaves roundish kidney-shaped with 3—5 rounded entire lobes, petals (small) narrow scarcely longer than the calyx or sometimes twice as long, stamens 5—12, receptacle of fruit glabrous. *E. B.* t. 2003.

Wet places, shallow pools of water, and where water has stood. ♃.

Fl. throughout the summer. — With regard to this and the five preceding species, M. Seringe, to whom most of them were well known, and who had studied them closely, long ago recorded his decided opinion, that all were mere varieties. We have not found the characters taken from the receptacle to vary, but we dare not assert that it does not, since we know that the hairiness of the achenes of *R. aquatilis* certainly does, and the hairiness is merely a continuation of that of the receptacle.

** *Achenes not transversely wrinkled. Petals white; nectary without a scale.*

7. R. **alpéstris* L. (*alpine white C.*); leaves glabrous, radical ones petiolate orbicular more or less 3—5-lobed, lobes at the extremity crenate, stem-leaves 1—2 sessile simple linear or deeply divided into 3—5 simple linear segments, stem mostly 1-flowered, petals obcordate. *E. B.* t. 2390.

"By little rills and among rocks on the mountains of Clova, Angusshire, seldom flowering." *G. Don.* 1809. 4. 5. — *Stem* 3—6 inches high. A specimen from Don in Herb. Brodie, which is marked "on rocks near the Head of Clova," has the aspect of a wild one, but we still consider it a very doubtful native.

*** *Achenes not transversely wrinkled or obscurely so. Flowers yellow; nectary with a small scale.*

† *Leaves undivided.*

8. R. *Lingua* L. (*great S.*); leaves lanceolate subserrated sessile semiamplexicaul, stem erect glabrous, achenes minutely pitted with a broad ensiform beak. *E. B.* t. 100.

Marshes, sides of lakes, and ditches; not very general. 4. 7—9. — *Stem* 2—3 feet high. *Flowers* large, handsome.

9. R. *ophioglossifólius* Vill. (*Serpent's Tongue S.*); leaves oblong sessile, lower ones cordato-ovate petiolate, stem erect many-flowered, achenes obliquely ovate with a short point margined, the sides tubercled. *E. B. S.* t. 2835.

St. Peter's Marsh, Jersey; *Mr. C. C. Babington.* 4. 6. — A very distinct species, allied in the foliage to the following, but in its annual duration and the achenes to *R. hirsutus.* *Flowers* small; heads of *fruit* large in comparison.

10. R. *Flámmula* L. (*lesser S.*); leaves linear-lanceolate nearly entire petiolate, the lower ones ovato-lanceolate, stem decumbent at the base and rooting, achenes minutely pitted or smooth with a short or sometimes subulate point. *E. B.* t. 387. — β. much smaller, stem creeping filiform. R. reptans *Lightf. Scot.* p. 289. t. 1.

Sides of lakes and ditches, abundant. — β. Margins of the Highland lakes, in barren stony places. 4. 6—8.

11. R. **gramíneus* L. (*grassy C.*); leaves linear-lanceolate striated entire, stem erect glabrous, scale of the nectary tubular, achenes irregularly wrinkled with a short recurved point, root fascicled. *E. B.* t. 2306.

"Brought from North Wales by Mr. Pritchard." *With.* ♃. 5, 6.

12. R. *Ficária* L. (*Pilewort C., lesser Celandine*); leaves cordate petiolate angular or crenate, sepals 3, petals 9, achenes smooth blunt. *E. B.* t. 584. Ficaria ranunculoides *De C.*

Pastures, woods, bushy places, &c. ♃. 3—5. — *Root* consisting of many long fasciculated *knobs*. *Leaves* petiolate, 2—3 on the 1-flowered *stem*. *Flowers* glossy, yellow.

†† *Leaves divided. Achenes smooth or wrinkled. Perennial.*

13. R. *aurícomus* L. (*Wood C.*); leaves glabrous, radical ones reniform 3-partite and cut, stem-leaves divided to the base into linear subdentate segments, calyx pubescent shorter than the petals, head of fruit globose, achenes downy. *E. B.* t. 624.

Woods and coppices, not unfrequent. ♃. 4, 5,—Not acrid, as most of the other *Crowfoots*.

14. R. *scelerátus* L. (*Celery-leaved C.*); leaves glabrous, radical ones petiolate tripartite, lobes cut very obtuse, upper ones in 3 linear cut segments and reflexed calyx hairy, achenes slightly wrinkled collected into an oblong head, receptacle hairy. *E. B.* t. 681.

Sides of pools and ditches. ♃. 5—9.— *Stem* short, succulent, 1—2 feet high. Lower *leaves* very broad and glossy. *Flowers* extremely small, pale yellow.

15. R. *ácris* L. (*upright Meadow C.*); calyx spreading, peduncles rounded (not furrowed), leaves tripartite their segments acute trifid and cut, upper ones linear, achenes and receptacle glabrous. *E. B.* t. 652.

Meadows, pastures, and mountainous situations. ♃. 6, 7.

16. R. *répens* L. (*creeping C.*); calyx spreading, flower-stalks furrowed, scions creeping, leaves with 3 petiolated leaflets which are 3-lobed or 3-partite and cut, achenes collected into a globose head glabrous, receptacle hairy. *E. B.* t. 515.

Pastures, too frequent. ♃. 5—8. —Well distinguished by its creeping *scions*, and furrowed *peduncles*.

17. R. *bulbósus* L. (*bulbous C.*); calyx hairy reflexed, peduncles furrowed, stem upright many-flowered, leaves cut into 3 petiolate leaflets which are 3-lobed or 3-partite and cut, root bulbous, achenes smooth, receptacle hairy. *E. B.* t. 515.

Meadows and pastures, frequent. ♃. 5, 6.— *Stem* 1 ft. high,

hairy. Lobes of the lower *leaves* subovate; upper leaves with linear segments.

††† *Leaves divided. Achenes tuberculated or muricated. Annual.*

18. R. *hirsútus* Curt. (*pale hairy C.*); calyx reflexed, stem erect many-flowered hairy, leaves 3-lobed or 3-partite, lobes obtuse cut, root fibrous, achenes margined and tuberculated near the margin. *E. B.* t. 1504. R. Philonotis *Ehrh.*

Meadows and waste ground. ⊙. 6—9.—Varying extremely in size. When very small it is *R. parvulus* L.

19. R. *arvénsis* L. (*Corn C.*); calyx spreading, stem erect many-flowered, leaves 3-cleft their lobes generally again 3-cleft into linear entire or bi-tridentate segments, achenes margined muricated. *E. B.* t. 135.

Corn-fields. ⊙. 5—7.—*Achenes* very large and prickly. *Flowers* small, pale yellow.—Said to be extremely injurious to cattle.

20. R. *parviflórus* L. (*small-flowered C.*); stem spreading, leaves hairy 3-lobed and cut, penduncles opposite the leaves, calyx as long as the petals, achenes muricated. *E. B.* t. 120.

Corn-fields about London, Norwich, and in the S. and S. W. of England. Chelmsford. Hackfall. Ormshead. Cork. Sand-hills between Baldoyle and Howth, Dublin. ⊙. 5—8.—Well distinguished by its spreading *stems*, lateral *flower-stalks*, and small narrow *petals*, one or two of which are often wanting.

** *Ovaries (and fruit) elongated, many-seeded. Stamens numerous.* (Gen. 7—14.)

7. Cáltha *Linn.* Marsh Marygold.

Sepals 5, petaloid. *Pet.* none. *Follicles* 5—10, compressed, spreading, with many seeds.—Named from καλαθος, a *cup*, which its flowers resemble.

1. C. *palústris* L. (*common M.*); stem erect rooting or creeping, leaves orbiculari-cordate or reniform crenate, calyx-leaves 5—6 oval deciduous. *E. B.* t. 506.—β. leaves cordato-triangular sharply crenate. C. radicans *Forst.*: *E. B.* t. 2175.

Marshy places, common.—β. Scotland? ♃. 3—6.—Petioles with large stipule-like auricles at the base. β is only known, and in our opinion has never been known, except as a garden variety: what is usually taken for it is a small state of α, common in mountainous situations, and which is the *C. minor* of Miller's Dict.

8. Tróllius *Linn.* Globe-flower.

Sepals 5 or many, coloured. *Pet.* 5 or many, small, linear,

flat, with an obscure depression above the contracted base. *Stamens* numerous. *Follicles* many.—Name said to be derived from "*trol* or *trolen*" a *ball* or *globe* in old German, and bearing the same meaning as our English word *Globe-flower.*

1. T. *Europæ'us* L. (*Mountain G.*); calyx of about 15 concave erect sepals, petals nearly as long as the stamens. *E. B.* t. 28.

Moist mountain-pastures in the north of England and Ireland, Wales and Scotland. ♃. 6—8.—*Leaves* in 5 deep segments, which are again cut and serrated. *Flowers* large, handsome.

(*Eránthis hyemális* Salisb., the well-known *Winter-aconite* of our gardens and shrubberies, although naturalized in several places, has no claim to a place in the *British Flora.*)

9. Helléborus *Linn.* Hellebore.

Cal. of 5 persistent sepals. *Pet.* 8—10, small, tubular, and nectariferous. *Stamens* numerous. *Follicles* 3—10, sessile.—Name: ἑλειν, to *injure*, and βορα, *food*, from its poisonous nature.

1. H. *víridis* L. (*green H.*); stem few-flowered leafy, leaves digitate, calyx spreading. *E. B.* t. 200.

Woods, thickets, and hedges; and about walls and old houses especially in a chalky soil: perhaps wild in Birkdale near Helmsley, Yorkshire, and in the south of England. ♃. 3, 4.—About 1 ft. high. *Leaves* annual, large, on a broad stalk; upper ones sessile; segments linear-lanceolated, serrated at the extremity. *Cal.* large, greenish-yellow. This and the following have been often employed medicinally, instead of the true *ancient* or *Greek H.* (*H. officinalis* Sibth. and Smith).

2. H. *fœ'tidus* L. (*stinking H.*); stem many-flowered leafy, leaves pedate, calyx converging. *E. B.* t. 613.

Pastures and thickets, especially in chalky counties, in England; wild in Hants; *Dr. Bromfield.* Blantyre, Barncluith and by the Doune (Ayr) on the west; and near Anstruther, on the east of Scotland, but certainly introduced. ♃. 2—4.—A bushy plant, 2 feet high. *Leaves* evergreen, uppermost ones gradually becoming *bracteas.* *Flowers* globose; *calyx* often tipped with a purple tinge. Fetid and powerfully cathartic.

10. Aquilégia *Linn.* Columbine.

Cal. of 5 sepals, deciduous, coloured. *Pet.* 5, regular terminating below in a horn-shaped spur or nectary. *Stamens* numerous. *Follicles* 5.—Named from *Aquila*, an *eagle*, whose claws the nectaries resemble.

1. A. * *vulgáris* L. (*common C.*); spur of the petals incurved, follicles hairy, stem leafy many-flowered, leaves nearly glabrous, styles as long as the stamens. *E. B.* t. 297.

Woods and coppices, in several places, perhaps wild in Hants. ♃. 5—7.—Inner *stamens* frequently imperfect.

11. Delphínium *Linn.* Larkspur.

Cal. coloured, deciduous, irregular, upper sepal produced at the base into a *spur*. *Pet.* 4.; 2 upper ones with appendages included within the spur. *Stamens* numerous. *Follicles* 1—5.—Named from *Delphinus*, or δελφιν, a *dolphin*; on account of the shape of the upper sepal.

1. D. * *Consólida* L. (*Field L.*); stem erect branched, flowers in lax racemes, petals combined, inner spur of one piece, pedicels shorter than the bracteas, follicle one glabrous. *E. B.* t. 1839.

Sandy or chalky fields; Suffolk, Kent. "About Cambridge, at Quay, the hills are quite blue with it; it also occurs red, pink, and white, and yet *Ray* does not mention it;" *Henslow*. Near St. Helier's Jersey: *Mr. Babington*. ♃. 6, 7.

12. Aconítum *Linn.* Wolf's-Bane.

Cal. petaloid, irregular, upper sepal helmet-shaped; 2 upper petals or nectaries on long stalks, and concealed within the helmet-shaped leaflet. *Stamens* numerous. *Follicles* 3—5.—Name derived from *Acone* in Bithynia; or rather from ακων, a *dart*, from its having been long ago used to poison such weapons with.

1. A. * *Napéllus* L. (*common W.*, or *Monk's-hood*); upper sepal arched at the back, spur of the nectary nearly conical bent down, wings of the stamens cuspidate or none, lobes of the leaves cuneate pinnatifid. *E. B. S.* t. 2730.

Teme, Herefordshire. Denbighshire and Monmouthshire. Below Staverton Bridge, Devon. ♃. 5—7.

13. Actæ'a *Linn.* Bane-berry.

Cal. of 4 sepals caducous. *Pet.* 4. *Stamens* numerous. *Ovary* 1. *Berry* 1-celled, indehiscent. *Seeds* numerous.—Named from ακτη, the *Elder*; the leaves somewhat resembling those of the *Elder*.

1. A. *spicáta* L. (*B.*, or *Herb Christopher*); raceme simple elongated, petals as long as the stamens, pedicels of the fruit slender. *E. B.* t. 918.

Bushy places, especially in limestone tracts in Yorkshire; near Halifax: said to be found near Ambleside and Sandwick, Ulleswater, in Westmoreland. ♃. 5.— *Stem* 1—2 ft. high. *Leaves* petiolate, 3-ternate; *leaflets* ovate, deeply cut and serrated.

14. Pæónia *Linn.* Pæony.

Cal. of 5 sepals. *Pet.* 5—10, concave. *Stamens* numerous, arising from a thick disk. *Follicles* 2—5, with many *seeds*, and covered with the bi-lamellated *stigmas.*—Said to be named in honour of the physician *Pæon*, or Παιων; but this was one of the names of Apollo, aud the title of all physicians.

1. P.* *corallína* Retz (*entire-leaved P.*); herbaceous, follicles downy recurved, leaves biternate glabrous, their segments ovate entire. *E. B.* t. 1513.

On the island called Steep Holmes, in the Severn. Blaize Castle, near Bristol. *Mr. Hancock.* ♃. 5, 6.

Ord. II. BERBERIDACEÆ *Vent.*

Sepals 3—6, often coloured, in a double row and bracteated. *Petals* of the same or double that number, glandular at the base. *Stamens* opposite to the petals. *Anthers* 2-celled, opening by recurved valves. *Ovary* 1-celled. *Style* usually short. *Fruit* mostly a *Berry*. *Seeds* inserted at the base of or upon a lateral *placenta*. *Albumen* fleshy.—Shrubs *often spiny, or* herbs, *of temperate climates.* Leaves *ciliated on the serratures.*

1. Berberis. Stamens 6. Fruit a 2—3-seeded berry.
2. Epimedium. Stamens 4. Fruit a many-seeded pod.

1. Bérberis *Linn.* Barberry.

Cal. of 6 concave, coloured, inferior, deciduous sepals. *Pet.* 6, each with two glands at the base. *Stamens* 6. *Stigma* peltate, nearly sessile. *Berry* 2—3-seeded.—Name: *Berbêrys* is the Arabic name of the fruit.

1. B. *vulgáris* L. (*common B.*); racemes pendulous, spines 3-forked, leaves obovate ciliato-serrate. *E. B.* t. 49.

Copses, woods, and hedges, in England and Scotland. Near Fermoy, Ireland. ♄. 5, 6.—*Shrub* with upright twiggy *stems.* Flowers yellow, smelling disagreeably. *Stamens* highly curious in their formation and in their elastic property when touched. *Berries* oblong, a little curved, red, tipped with the black *stigma:* they are acid and much used for preserves.

2. Epimédium *Linn.* Barrenwort.

Cal. of 4 sepals, caducous. *Pet.* inferior, with an inflated *nectary* on the upper side. *Stamens* 4. *Capsule* pod-shaped, 2-valved, inner valve bearing several seeds along its middle.—Name of doubtful origin.

1. E. *alpínum* L. (*alpine B.*); root-leaves none, stem-leaf twice ternate. *E. B.* t. 438.

Subalpine woods, but only where planted. Bingley woods, Yorkshire. On Carrock Fell and Skiddaw, Cumberland. Near Glasgow and Edinburgh. ♃. 5.— *Stems* several from the same root, erect, simple, bearing each a leaf; *leaflets* heart-shaped, extremely delicate, ciliated at the margin, hairy beneath, serrated; *lateral* ones inequilateral. *Panicle* shorter than the leaf, springing from the swollen base of the petiole. *Flowers* reddish; *nectary* yellowish, resembling an inflated membrane. *Anthers* very curious, of 2 *cells*, opening by two *valves* which spring back upwards, and suffer the *pollen* to escape.

Ord. III. NYMPHÆACEÆ *De Cand.*

Sepals about five, often gradually passing into the numerous *petals*, and these again into *stamens*, which arise from a fleshy disk surrounding more or less entirely the many-celled and many-seeded *ovary*. *Stigma* peltate, rayed. *Seeds* in a gelatinous aril. *Albumen* farinaceous. *Embryo* enclosed in a membranous bag. *Cotyledons* foliaceous.—*Aquatic* herbs, *with peltate or cordate* leaves *and magnificent* flowers.—The roots of *Nymphæa Lotus* are used as food. One plant of this family, found by Sir R. Schomburgk in the Berbice (*Victoria regia*), has the blossoms 15 inches and the leaves 6 feet *in diameter!*

1. Nymphæa. Petals and stamens inserted upon the base of the ovary.
2. Nuphar. Petals and stamens inserted upon the receptacle.

1. Nymphæ'a *Linn.* White Water-Lily.

Cal. of 4—5 sepals. *Pet.* inserted, as well as the *stamens*, upon a fleshy disk or covering to the ovary (so as apparently to arise from it). *Berry* many-celled, many-seeded.—Name, the Νυμφαια of the Greeks, so called from its inhabiting the waters, as the *Nymphs* or Naiads were wont to do.

1. N. *álba* L. (*great W.*); leaves cordate entire, stigma of 16 ascending rays. *E. B.* t. 160.

Lakes and still waters, frequent. ♃. 7.—Of this there is occasionally a variety with small flowers.

2. Núphar *Sm.* Yellow Water-Lily.

Cal. of 5—6 sepals. *Pet.* inserted, as well as the *stamens*, upon the *receptacle*. *Berry* superior, many-celled, many-seeded.—Name, the Νουφαρ of Dioscorides, applied to this plant. The *Arabic* name is *Naúfar*, according to Forskal.

1. N. *lútea* Sm. (*common Y.*); leaves cordate their lobes approximate, cal. of 5 sepals, anthers linear, stigma expanded entire with from 10—20 rays. Nymphæa *L.*: *E. B.* t. 159.

Lakes and ditches, frequent. ♃. 7.—*Flowers* large, smelling

somewhat like brandy; which circumstance, in conjunction with it flagon-shaped seed-vessels, has led to the name Brandy-bottle.

2. N. *púmila* De C. (*least Y.*); leaves cordate the lobes ap proximate, anthers oblong, stigma (green) with 8 or 10 teet and as many (yellow) rays, fruit furrowed upwards. N. minima *E. B.* t. 2292.

In several of the small Highland lakes. Mugdock, near Glasgow Chartners Lough, Northumberland? ♃. 7, 8. — From the observa tions made by Dr. Torrey and Gray, it would seem doubtful if thi were essentially distinct, not merely from *N. Kalmiana*, but even fron *N. lutea*, and some others. The English plant we have not seen: i is said to have the stigma of *N. lutea*, of which it may be only small-flowered form.

Ord. IV. PAPAVERACEÆ *Juss.*

Calyx of 2 rarely 3 deciduous sepals. *Corolla* of 4 rarely 6 or 6 *petals*. *Stamens* indefinite. *Ovary* 1-celled. *Stigma* lobed or rayed. *Fruit* dry, with 2 or more parietal usually project ing placentas, forming complete or incomplete dissepiments hence 1- or several-celled, many-seeded. *Embryo* in the base of a fleshy *albumen*. — *Herbaceous* plants. Leaves *alternate*. — *Opium* is the product of this tribe, which largely afford a milky acrid, and narcotic juice; while the seeds of all, except *Argemone Mexicana*, are mild and oleaginous. In all the species the *petals* are crumpled in æstivation except in *Sanguinaria* where they are 8—10 in number.

* *Fruit globose, oblong, or clavate. Stigma rayed.*

1. Papaver. Placentas lamelliform, projecting to near the axis. Stigma sessile.
2. Meconopsis. Placentas filiform. Style short but evident.

** *Fruit linear, elongated. Stigma* 2—4-*lobed.*

3. Glaucium. Placentas 2, spongy, meeting in the axis. Pod 2-valved opening from the apex. Seeds not crested.
4. Rœmeria. Placentas 3—4 (*in Brit. sp.*), scarcely projecting. Pod 3—4-valved, opening from the apex. Seeds not crested.
5. Chelidonium. Placentas 2, filiform. Pod 2-valved, opening from the base. Seeds crested.

* *Fruit globose, oblong, or clavate. Stigma rayed.*

1. Papáver *Linn.* Poppy.

Sepals 2 rarely 3. *Pet.* 4 rarely 6. *Stigma* sessile, radiated. *Caps.* with the seeds on parietal *placentas* projecting towards the centre of the single cell, and escaping by pores beneath the permanent rayed sessile *stigma*. — Named because it is administered with *pap* (*papa*, in Celtic) to induce sleep.

1. P. *Argemóne* L. (*long-prickly-headed P.*); capsule clavate hispid with erect bristles, filaments dilated upwards, stem leafy, leaves bipinnatifid. *E. B.* t. 643.

Corn-fields, not unfrequent. ⊙. 5—7.—*Flowers* small. *Petals* narrow, scarlet.

2. P. *hýbridum* L. (*round-rough-headed P.*); capsule subglobose hispid with spreading bristles, filaments dilated upwards, stem leafy, leaves bipinnatifid. *E. B.* t. 43.

Sandy and chalky fields in England, rather rare. Norfolk, Durham, Cornwall, Kent, Essex. Ormeshead. Ireland. ⊙. 5—7.

3. P. *dúbium* L. (*long-smooth-headed P.*); capsule glabrous oblong, crenatures of stigma distinct, filaments subulate, stem hairy, bristles of the flower-stalks appressed, leaves once or twice pinnatifid, sessile. *E. B.* t. 644.

Corn-fields, not unfrequent. ⊙. 5—7.—*Stems* 1—2 ft. high. *Flowers* large. *Petals* broad, palish scarlet.

4. P. *Rhœ'as* L. (*common red P.*); capsule glabrous nearly globose, crenatures of the stigmas overlapping each other at the margin, filaments subulate, stem bristly, leaves once or twice pinnatifid sessile.—*α.* bristles of the peduncles spreading. *E. B.* t. 645.—*β.* bristles of the peduncles appressed.

Corn-fields: rare in the west of Scotland. *β.* Channel Islands and Isle of Wight. ⊙. *Fl.* all summer.—The common form is readily distinguished from *P. dubium* by its short *capsule* and the spreading hairs of the *peduncles*: var. *β.* is conjectured by Dr. Bromfield to be a hybrid.

5. P.* *somníferum* L. (*white P.*); glaucous, capsule, globose glabrous, filaments dilated upwards, stem and amplexicaul leaves usually glabrous. *E. B.* t. 2145.

In Norfolk, Cambridgeshire, Isle of Wight, and other places where the plant has been cultivated. ⊙. 7.—*Flowers* generally white, with a purple eye, but varying much as to colour. From the unripe capsules *opium* is prepared.

2. Meconópsis *Viguier*. Welsh-Poppy.

Sep. 2. *Pet.* 4. *Style* evident. *Stigma* of few rays. *Capsule* opening below the style by 4—6 valves. *Placentas* filiform. — Named from μηκων, a *poppy*, and οψις, *resemblance*.

1. M. *Cámbrica* Vig. (*common W.*); capsule glabrous, leaves mostly petiolate. *D C.* Papaver *L.*: *E. B.* t. 66.

Rare: rocky and shady places. Foot of Lidford cascade, Devon. Cheddar rocks, Somerset. N. Wales and Westmoreland. Rosstrevor hill, Ireland. Scotland, but naturalized. 4. 6.—*Leaves* on long stalks, pinnate, the pinnæ pinnatifid. *Flowers* large, yellow.

** *Fruit linear, elongated. Stigma* 2—4-*lobed.*

3. Glaúcium *Tourn.* Horned-Poppy.

Sep. 2. *Pet.* 4. *Stigma* 2-lobed, sessile. *Pod.* linear, the two *placentas* at length connected by a spongy dissepiment, hence 2-celled, 2-valved. *Seeds* dotted without a crest. — Named from the *glaucous* or sea-green hue of the stems and leaves.

1. G. *lúteum* Scop. (*yellow H.*); pod minutely tuberculated, cauline leaves amplexicaul sinuate, stem glabrous. *E. B.* t. 8. Chelidonium Glaucium *L.*

Sandy sea-shores, frequent. ⊙. 6—10. — *Stem* 1—2 ft. high, very glaucous, much branched. *Leaves* scabrous. *Flowers* very large, handsome, succeeded by *pods* 6—10 inches long.

2. G.* *phœníceum* Gært. (*scarlet H.*); pod hispid, cauline leaves deeply pinnatifid and cut, stem hairy. *E. B.* t. 1433. Chelidonium corniculatum *L.*

Said to have been found on Portland island, and in Norfolk. ⊙. 6, 7.—*Petals* scarlet, with a black spot at their base.

4. Rœméria *De Cand.* Rœmeria.

Sep. 2. *Pet.* 4. *Stigma* 2—4-lobed, sessile. *Pod* linear with 2—4 *placentas* not connected by a perfect dissepiment, 1-celled, 2—4-valved, *valves* separating from the apex downwards. *Seeds* dotted, without a crest. — Named after *J. J. Rœmer*, Professor of Botany at Landshut.

1. R.* *hýbrida* De C. (*erect-podded R.*); pod 3-valved erect hispid near the summit, leaves tripinnatifid the segments linear scabrous. Chelidonium *L.*: *E. B.* t. 201. Glaucium violaceum *Juss.*

Corn-fields, rare. Norfolk and Cambridgeshire. ⊙. 5, 6.—*Sepals* hairy. *Petals* violet-blue.

5. Chelidónium *Linn.* Celandine.

Sep. 2. *Pet.* 4. *Stigma* 2-lobed. *Pod* superior, linear, 1-celled, 2-valved, *valves* separating from the base upwards. *Seeds* crested. — Named from χελιδων, a *swallow*; probably from the plant flowering about the time of the arrival of those birds.

1. C. *május* L. (*common C.*); *E. B.* t. 1581.

Waste places, especially near towns and villages. ♃. 5—8. — About 2 ft. high, slightly hairy, brittle, full of a yellow fetid juice. *Leaves* pinnate, with about 5 decurrent *segments*, which are broadly ovate, lobed, and crenated, sometimes jagged. *Flowers* in long-stalked *umbels*, yellow, rather small. *Sepals* glabrous. *Pod* long, somewhat turgid.

Ord. V. FUMARIACEÆ *De Cand.*

Sepals 2, deciduous. *Petals* 4, more or less united, one or two of them gibbous or spurred at the base. *Stamens* 6, in two bundles. *Ovary* 1, with two opposite parietal *placentas*. *Style* filiform. *Stigma* lobed. *Fruit* dry, indehiscent, with one or two *seeds;* or a pod with two valves and many seeds. *Seeds* glossy, with a fleshy *albumen* and *embryo* at the base. — Herbs *of temperate climates, with brittle stems and watery juice, slightly bitter and diaphoretic.* — *Hypecoüm* has four distinct *stamens* and a different kind of *corolla*, but is now usually referred here.

1. Fumaria. Fruit roundish, 1-seeded. Seeds not crested.
2. Corydalis. Fruit elongated, many-seeded. Seeds with a crest.

1. Fumária *Linn.* Fumitory.

Pet. 4, one of them gibbous or spurred at the base. *Ovary* 4-ovuled. *Fruit* indehiscent, 1-seeded, the *style* deciduous. *Seeds* without a crest. — Named from *fumus, smoke*, on account, it is said, of the smell.

1. F. *capreoláta* L. (*rampant F.*); sepals broadly oval scarcely acute toothed at the base entire above as broad as the tube of the corolla and often half its length, fruit globose obtuse, segments of leaves flat. *E. B.* t. 943.

Corn-fields, gardens, hedges, and road-sides, frequent. ☉. 5—9. — A very variable plant, best distinguished by its large *petals* and *calycine leaves*. *Stems* generally climbing, sometimes only diffuse. *Leaves* bipinnate; *segments* usually very broad, rarely cuneate oblong, but never linear or grooved. In the south of Europe the fructiferous *pedicels* are usually remarkably recurved, in Germany and the south of England they are only arched backwards, and in Wales and Scotland often straight and patent: this last form is the *F. agraria* of British collectors, but not apparently the true species of that name. The *fruit* is often in some soils more or less tuberculated, but usually quite even. Lower *petal* linear or gradually dilated from the middle to the point, not merely dilated near the point as in the next species.

2. F. *officinális* L. (*common F.*); sepals ovato-lanceolate acute sharply toothed narrower than the tube of the corolla, fruit globose very abrupt or obcordate. — *α.* erect, very glaucous, segments of leaves narrow usually grooved. F. officinalis, *E. B.* t. 589. — *β.* diffuse or climbing, green, segments of leaves flat broad.

α. In dry fields and road-sides, common. — *β.* also frequent in highly cultivated fields and gardens. ☉. *Fl.* through the summer.

3. F. *Vaillantii* Loisl. (*Vaillant's F.*); sepals very minute, fruit obovate-globose slightly pointed, pedicel twice as long as the bract, segments of leaves narrow flat glaucous. *E. B. S.* t. 2877.

Fields; rare. Kent, Essex, Cambridgeshire, &c. We have now reason to believe that the English plant is the same as Loisleur's; but we still entertain doubts of its being truly distinct from the next, the only essential difference, if that be constant, being in the greater length of the pedicel.

4. F. *parviflóra* Lam. (*least-flowered F.*); sepals very minute, fruit obovate-globose slightly pointed or blunt, pedicel as long as the bract, segments of the leaves linear channelled glaucous. — *α.* flowers rose-coloured, *E. B.* t. 590. — *β.* flowers white tipped with dark purple. F. parvif. *DC.*

Fields; rare. ☉. 6—9.—The more common of these two *vars.* is that with white flowers.

5. F. *micrántha* Lag. (*small-flowered F.*); sepals peltate orbicular somewhat cordate at the base inciso-dentate at the margin concave at the back about twice shorter than the corolla and one and a half or twice broader, fruit globose subapiculate, pedicels shorter than the bracts, segments of the leaves narrow linear grooved. *Hook. Ic. Pl.* t. 363. *E. B. S.* t. 2876.

About Edinb., and in several other localities in the east of Scotland; Dover, Guildford, and New Burnham (Norfolk), in England. ☉. 6—9.

2. Corýdalis *De Cand.* Corydalis.

Pet. 4, one of them gibbous or spurred at the base. *Ovary* many-ovuled. *Pod.* 2-valved, compressed, many-seeded. Seeds with a crest. — Named from κορυδαλις, the Greek name for the *Fumitory*, with which the present genus was, till lately, united.

1. C.* *sólida* Hook. (*solid-rooted C.*); stem simple erect with a scale beneath the lower leaf, leaves 3—4 biternate their segments cuneate or oblong and as well as the bracteas cut, root tuberous solid, style persistent. *E. B.* t. 1471.

Groves and thickets: at Kendal (an old garden). Wickham, Hampshire (perhaps wild); and near Birmingham. ♃. 4, 5. — *Flowers* large, purplish; *leaves* glaucous; *seeds* with a crest, in germination showing only one ovate *cotyledon.*

2. C.* *lútea* Lindl. (*yellow C.*); stem angular erect, leaves bipinnate, segments broadly cuneate cut or trifid, bracteas minute, style deciduous, pods nearly cylindrical shorter than the pedicels root fibrous. Fumaria: *E. B.* t. 588.

On old walls in many places, but only where it had escaped from cultivation. ♃. 5—8.—*Flowers* yellow; *seeds* with a concave crest, in germination with two lanceolate *cotyledons.*

3. C. *claviculáta* DC. (*white climbing C.*); stem much branched climbing, leaves pinnate, pinnæ stalked ternate or pedate,

segments elliptical entire, petioles ending in tendrils, pedicels very short scarcely so long as the minute bracteas, root fibrous, style persistent. Fumaria *L.* : *E. B.* t. 103.

Bushy and shady places, in gravelly or stony soil. In Scotland, most abundant on walls and roofs of houses, especially in the Highlands. ♃. 6, 7.—*Stems* long, very slender. Whole plant extremely delicate. *Flowers* small, pale yellow almost white; *seeds* with a concave crest, in germination with two oblong lanceolate *cotyledons*.

Ord. VI. CRUCIFERÆ *Juss.*

Calyx of 4 sepals. *Petals* 4. *Stamens* usually 6 and tetradynamous; 2 solitary, alternate with the petals; 4 opposite to them in 2 pairs; rarely only 4 and equal. *Ovary* and *Style* 1; *hypogynous glands* at the base of the solitary stamens. *Pericarp* usually a *pouch* or *pod*, 2-rarely 1-celled, 2-valved the valves opposite the shorter stamens; sometimes valveless. *Seeds* on marginal placentas (between the longer stamens) without *albumen*. *Radicle* curved. *Cotyledons* plane, parallel to the dissepiment and with their edges applied to the radicle (*accumbent* o=)[1]; or plane, with their back turned to the radicle (*incumbent* o‖); or folded and embracing the radicle (*conduplicate* o> >) — *Herbs*. *Leaves* alternate. *Flowers* generally in corymbs which at length become racemes. — A most important *Natural Order*, many of the plants which it contains being cultivated as esculents; the *Cabbage*, *Turnep*, *Mustard*, and *Cresses* of various kinds, *Horse-radish*, &c. They contain an essential oil which renders them stimulating, while their seeds yield a fine and mild oleaginous fluid, as *Rape;* and they are antiscorbutic. The mustard-seed is used for sinapisms. Most kinds contain sulphur and nitrogen, and give out in decaying a smell resembling that of animal matter.

I. Siliculosæ. Fruit short, scarcely more than a half longer than broad.

A. *Fruit without valves; or* 1-*celled,* 1-*seeded.*

17. Cakile. Fruit of 2 joints placed end to end, upper angular deciduous 1-seeded, lower sometimes sterile. Cot. o=.
32. Crambe. Fruit of 2 joints placed end to end, upper globose deciduous 1-seeded, lower stalk-like. Cot. o>>.
26. Senebiera. Fruit with 2 cells placed side by side, each 1-seeded. Cot. o‖.
27. Isatis. Fruit 1-celled, 1-seeded, with keeled valves. Cot. o‖.

[1] The radicle points to or is next the placenta, and, unless accidentally twisted, must be parallel to the dissepiment. When, therefore, the cotyledons are flat, with their edges turned to the placenta, they are *truly accumbent*, although *apparently incumbent*. But when they are linear, or the seed is nearly terete, their position and that of the seed itself may be altered by a twist of the seed stalk, in which case it is preferable to be guided solely by the apparent relative position of the radicle and cotyledons in the detached seed.

B. *Pouch with a dissepiment and 2 valves.*

* *Style flat, winged. Dissepiment of pouch oval.*

31. VELLA. Style twice as long as the turgid pouch. Cot. o>>.

** *Style nearly terete.*

† *Pouch laterally compressed; dissepiment narrow, oblong, or linear: valves keeled or winged.*

23. CAPSELLA. Pouch obcordato-cuneate; valves keeled wingless; cells many-seeded. Cot. o‖.
13. THLASPI. Pouch emarginate; valves winged; cells 2—8-seeded. Filaments simple. Cot. o=.
14. HUTCHINSIA. Pouch entire; cells 2-seeded. Filaments simple. Cot. o=.
15. TEESDALIA. Pouch emarginate; cells 2-seeded. Filaments with a scale. Cot. o=.
16. IBERIS. Cells of pouch 1-seeded. Petals unequal. Cot. o=.
25. LEPIDIUM. Cells of pouch 1-seeded. Petals equal. Cot. o‖, or sometimes o=.

†† *Pouch dorsally compressed or globose; dissepiment oval, in the broadest diameter.*

10. COCHLEARIA. Pouch turgid; valves 1-nerved. Style permanent. Seeds many in each cell. Cot. o=. Petals white.
9. ARMORACIA. Pouch turgid; valves nerveless. Style permanent. Seeds many in each cell. Cot. o=. Petals white or yellow.
24. SUBULARIA. Pouch turgid. Style deciduous. Seeds many in each cell. Cot. o‖. Petals white.
12. DRABA. Pouch compressed or valves slightly convex. Seeds many in each cell. Cot. o=.
22. CAMELINA. Pouch inflated; valves 1-nerved. Style permanent. Seeds many in each cell. Cot. o‖. Petals yellow.
11. KONIGA. Pouch compressed; cells 1-ovuled, 1-seeded. Filaments simple. Hypogynous glands 8. Cot. o=. Petals white.
11[a]. ALYSSUM. Pouch compressed; cells 2-ovuled, usually 2-seeded; valves convex in the middle, flat at the edges. Seeds not margined. Filaments (the two shorter ones or all) with a tooth, rarely simple. Hypogynous glands (or subulate processes, when all the filaments are simple) 4. Petals emarginate (yellow). Cot. o=.
11[b]. BERTEROA. Pouch compressed; cells about 6-seeded. Two shorter filaments with a tooth. Hypogynous glands 4. Petals (white) tripartite. Cot. o=.

II. SILIQUOSÆ. Fruit usually much longer than broad, rarely only twice as long.

C. *Pods 2-valved, with a dissepiment.*

* *Style sometimes very short, sometimes elongated, but not forming a stout conical beak. Cot. o= or o‖.*

† *Calyx equal at the base, or very slightly bigibbous.*

6. DENTARIA. Pods flat, linear; valves nerveless, usually separating elastically. Style filiform. Seed-stalks broad. Cot. o=.
7. CARDAMINE. Pods flat, linear; valves nerveless, usually separating elastically. Style short or none. Seed-stalks slender. Cot. o=.

5. Arabis. Pods compressed, long, linear; valves 1-nerved, or with several longitudinal coarse veins. Seeds in one row. Cot. o=.
4. Turritis. Pods compressed, long, linear; valves 1-nerved. Seeds in two rows. Cot. o=.
12. Draba. Pods compressed, oblong; valves 1-nerved. Seeds in 2 rows. Cot. o=.
3. Barbarea. Pods linear, 4-angled; valves 1-nerved. Seeds in a single row. Cot. o=.
8. Nasturtium. Pods oblong or linear, terete; valves very convex, reticulately veined, nerveless. Seeds irregularly in 2 rows. Cot. o=.
19. Sisymbrium. Pods linear, terete, or slightly angled; valves 3- (or rarely 1-) nerved. Seeds not striated; stalks slender. Calyx slightly spreading. Cot. o‖.
20. Alliaria. Pods long, linear, terete; valves slightly 3-nerved. Seeds striated; stalks broad. Cot. o‖.
21. Erysimum. Pods linear, 4-angled; valves 1-nerved. Seed-stalks slender. Calyx erect. Cot. o‖.

†† *Calyx conspicuously bisaccate at the base. Valves of pod nerved.*

21. Erysimum. Stigma nearly simple. Pod 4-angled. Cot. o‖.
2. Cheiranthus. Stigma on a style, lobes patent (or capitate). Cot. o=.
1. Matthiola. Stigma sessile, lobes connivent, either thickened or horned at the back. Cot. o=.
18. Hesperis. Stigma nearly sessile; lobes elliptical, obtuse, connivent. Cot. o‖.
18a. Malcolmia. Stigma conical acute. Pod cylindrical. Cot. o‖.

** *Style forming a stout conical, often seed-bearing beak. Cot.* o>>.

28. Brassica. Calyx erect. Pod terete or angled. Seeds in a single row, globose.
29. Sinapis. Calyx spreading. Pod terete or angled. Seeds in a single row.
30. Diplotaxis. Calyx spreading. Pod compressed. Seeds in two rows.

D. *Fruit without valves or a dissepiment.*

33. Raphanus. Fruit divided transversely into several 1-seeded joints. Calyx erect. Cot. o>>.

Sub-Ord. I. PLEURORHIZÆ. *Cotyledons accumbent.* (o=)

Tribe I. Arabideæ. *Pod elongated; valves flat, concave, or slightly keeled: dissepiment narrow, in the broadest diameter.*[1] *Cot.* o=(Gen. 1—8.)

1. Matthíola *Br.* Stock.

Pod (rounded or compressed) crowned with the connivent 2-lobed *stigma*, the lobes either thickened at the back[2] or with

[1] Some species of *Draba* almost agree with this character.
[2] It often happens, when this is the case, that the radicle is slightly twisted so as to be applied to the back of the cotyledons; but, as they are parallel to the dissepiment, they are really accumbent.

a horn at the base. *Cal.* erect, 2 opposite sepals saccate at the base. Longer *filaments* dilated. — Named in honour of an Italian physician, *P. A. Matthiolus.*

1. M. *incána* Br. (*hoary shrubby S.*); stem shrubby upright branched, leaves lanceolate entire hoary, pods cylindrical without glands. Cheiranthus *L.*; *E. B.* t. 1935.

Cliffs to the eastward of Hastings; but not wild. Ventnor, Isle of Wight. ♄. 4—6. — The origin of the Stock Gilly-flower of our gardens, where it is generally treated as an annual or biennial.

2. M. *sinuáta* Br. (*great-sea S.*); stem herbaceous spreading, leaves downy lower ones sinuated, pods compressed muricated. Cheiranthus *L.*; *E. B.* t. 462.

Sandy shores of Wales, Cornwall, Jersey, and Guernsey. ♂. 5—8. —*Flowers* purple, large, fragrant at night. Our two British species have no point or horn at the base of the stigma.

2. Cheiránthus *Linn.* Wall-flower.

Pod compressed or 2-edged. *Cal.* erect, 2 opposite sepals saccate at the base. *Stigma* placed on a *style*, 2-lobed, the lobes patent or capitate. *Hypogynous glands* none between the longer stamens. — Named perhaps from the Arabic *Kheyry*, not however originally applied to this genus; or rather from χειρ, the *hand*, and ανθος, a *flower*, because from its fragrance one delights to carry it in the hand.

1. C. *Cheíri* L. (*common W.*); leaves lanceolate acute entire with bipartite appressed hairs, pods linear, lobes of the stigma patent, stem shrubby at the base. C. fruticulosus *L.*: *E. B.* t. 1934.

Old walls. ♄. 5, 6.—A *variety*, with larger, more highly coloured and more flaccid *petals*, is commonly cultivated in gardens.

3. Barbaréa *Br.* Winter-cress.

Pod 4-angled and somewhat 2-edged; *valves* with a middle nerve. *Seeds* in a single row. *Calyx* erect, equal at the base. *Glands* between the shorter filaments and the germen, and a subulate one between each pair of the longer ones. — Name: this plant was formerly dedicated to *St. Barbara.*

1. B. *vulgáris* Br. (*bitter W., yellow Rocket*); lower leaves lyrate the superior ones obovate toothed or pinnatifid at the base, pods linear bluntly 4-angled acuminate much thicker than the pedicel.— *α.* uppermost side lobes of the radical leaves as long as the transverse diameter of the terminal roundish or somewhat cordate terminal lobe. Erysimum Barbarea *L.*: *E. B.* t. 443. — *β.* side lobes of the radical leaves all small and much

shorter than the transverse diameter of the oblong-ovate or cordate terminal lobe. B. stricta *Andr.*

Pastures and hedges, frequent. ♃. 5—8. — *Stem* 1—2 feet high, stout, furrowed, branched, glabrous. *Petals* yellow, usually the length of the calyx, or in what is called *B. arcuata*, twice as long. *Style* conspicuous.

2. B. **præ'cox* Br. (*early W.*); lower leaves lyrate or pinnate, upper ones pinnatifid, segments linear oblong entire, pods linear compressed obtuse scarcely thicker than the pedicel. Erysimum *E. B.* t. 1129.

Waste places in Devonshire and elsewhere. ♂. 4—10. — About 1—2 feet high; more slender than the last in every part; *flowers* smaller; *pods* longer. *Style* very short.

4. Turrítis *Linn.* Tower-Mustard.

Pod elongated, compressed, 2-edged; *valves* nerved or keeled. *Seeds* in a double row. *Calyx* nearly equal at the base. — Named from *turris*, a *tower;* the leaves becoming gradually smaller upwards, so that the plant assumes a pyramidal form.

1. T. *glábra* L. (*long-podded T.*); radical leaves toothed hairy, cauline ones amplexicaul entire glabrous. *E. B.* t. 777.

Banks and road-sides in many parts of England, but not general; apparently most frequent in Norfolk and Suffolk. Bowling Bay, Partick, and Redgorton (Perthshire), in Scotland. ☉. 5—7. — *Stem* 1—2½ feet high. *Leaves* oblong-lanceolate, glaucous, *radical* ones toothed or sinuate at the base, *cauline* ones sagittate. *Flowers* yellowish-white. *Pods* long, erect. In this genus there are no glands between the larger stamens.

5. A'rabis *Linn.* Rock-Cress.

Pod linear, compressed, crowned with the nearly sessile *stigma; valves* nerved or coarsely veiny. *Seeds* in one row. *Calyx* erect. — Name from αραβις, applied by Dioscorides to *Lepidium Draba.*

1. A. *stricta* Huds. (*Bristol R.*); leaves toothed obtuse hispid, radical ones sinuate toothed, cauline leaves sessile, stems hairy at the base, petals cuneate-linear erect, pods erect, their valves 1-nerved. *E. B.* t. 614.

Rare; St. Vincent's rocks, near Bristol, among limestone. ♃. 3—5. — Habit of *Sisymbrium Thalianum*, but perennial; *root-leaves* strongly ciliated with frequently forked or trifid hairs; *flowers* twice the size; *stem-leaves* few, small.

2. A. *petræ'a* DC. (*alpine R.*); radical leaves lyrato-pinnatifid stalked, cauline ones petioled nearly undivided, petals obovate clawed spreading, pods spreading twice as long as the pedicels,

their valves 1-nerved. A. hispida *L.* Cardamine hastulata. *E. B.* t. 469.

Alpine rocks in North Wales. Frequent on the high mountains of the west and north of Scotland, particularly the Cairngorm range. Hebrides, especially Skye. ♃. 6—8. — *Plant* 3—6 inches high, slender, glabrous or hairy. *Flowers* with a purple tinge.

3. A. *ciliáta* Br. (*fringed R.*); leaves somewhat toothed oval glabrous ciliated, radical ones nearly sessile obtuse, those of the simple stem semi-amplexicaul or rounded at the base, pods nearly erect, their valves 1-nerved. Turritis alpina *L.*: *E. B.* t. 1746.

By the sea-side at Rinville, Cunnamara, Ireland. ♂. 7, 8.— *Stem.* 4—6 inches high. *Root-leaves* several, oval, or obovate-oblong, obtuse; cauline ones small.

4. A. *hirsúta* Br. (*hairy R.*); leaves all hispid dentate, cauline ones semi-amplexicaul, pods erect straight, their valves 1-nerved. Turritis *L.*: *E. B.* t. 587.

Walls, rocks, and banks: frequent in many parts of England and Scotland. ♂. 6—8. — One foot or more high, erect, stiff. *Stem* rough with spreading hairs, bearing many leaves. *Petals* small, white, erect.

5. A. *Turríta* L. (*Tower Wall-cress*); cauline leaves amplexicaul, pods recurved flat and linear with the margins thickened and valves coarsely veined longitudinally not nerved, bracteas foliaceous. *E. B.* t. 178.

Walls of Trinity and St. John's Colleges, Cambridge; and Magdalen College, Oxford. ♂. 5. *Seeds* with a membranaceous margin.

6. Dentária *Linn.* Coral-root.

Pod narrow-lanceolate, tapering; the *valves* flat, generally separating elastically, nerveless. *Seed-stalks* broad. — Name: *dens*, a *tooth*, from the tooth-like scales of the root.

1. D. *bulbífera* L. (*bulbiferous C.*); stem quite simple, lower leaves pinnate, upper ones simple with axillary bulbs. *E. B.* t. 309.

Woods and shady places, rare. Sussex; Middlesex. Near Dupplin and banks of the Esk, but scarcely wild. ♃. 4, 5.—*Root* creeping, bearing thick fleshy scales or tooth-like processes. *Stem* 1—1½ foot high. *Leaflets* lanceolate as are the upper leaves, serrated, somewhat fleshy; *leaves* often having a small bulb in their axils. *Flowers* rather large, purple.

7. Cardamíne *Linn.* Bitter-Cress.

Pod linear, the *valves* flat, generally separating elastically,

nerveless. *Seed-stalks* slender.—Name: καρδια, the *heart*, and δαμαω, to *overpower*; from its supposed qualities.

1. C. *amára* L. (*large-flowered B.*); leaves pinnate, radical leaflets roundish, cauline ones dentato-angled, style oblique, stigma rather acute, stem rooting at the base, petals obovate. *E. B.* t. 1000.

Wet meadows, near rivulets; not unfrequent. 4. 4—6.—One foot high. Well distinguished from the following by the broad angulato-dentate *leaflets* of its upper *leaves*, and the large white flowers, which have purple *anthers*, and *stamens* almost as long as the *petals*.

2. C. *praténsis* L. (*common B.*); leaves pinnate, radical leaflets roundish dentate, cauline ones lanceolate nearly entire, style straight, stigma capitate, petals obovate. *E. B.* t. 776.

Moist meadows, abundant. 4. 4—6.—*Stem* 1—2 feet high. *Flowers* large, blush-coloured, sometimes found double, when the leaflets occasionally produce new plants, on coming in contact with the ground, while still attached to the parent plant. *Stamens* half as long as the *petals*.

3. C. *impátiens* L. (*narrow-leaved B.*); leaves pinnate, leaflets lanceolate somewhat cut or entire, petioles of the stem-leaves with fringed auricles at their base, petals linear or none. *E. B.* t. 80.

Moist rocks, rare; Derbyshire, Westmoreland, and Cumberland. By the Wye above Tintern. Godalming, Surrey. Near the falls of the Clyde and banks of the Doune, Scotland. ⊙. 5—8.—*Stem* 1—1½ foot high. Well distinguished by the stipule-like auricles at the base of each petiole. *Flowers* minute, white.

4. C. *hirsúta* L. (*hairy B.*); leaves all pinnate without auricles, radical leaflets roundish angled or toothed petiolate, stem-leaflets narrower nearly sessile, petals oblong, stigma blunt, pods erect.—*α.* smaller, pedicels erect, stamens often 4, style very short. *E. B.* t. 492.—*β.* larger, pedicels patent, stamens usually 6, style as long as the breadth of the pod. C. flexuosa *With.* C. sylvatica *Link.*

Moist shady places, abundant. ⊙. 3—8.—Varying much in size and luxuriance, according to soil and situation, from 4 inches to a foot or more in height. *Stamens* 6 in both varieties, or 4 in depauperated specimens.

(C. *bellidifolia* L., *E. B.* t. 2355, with simple entire leaves, is unknown, at least in the present day, as a native either of Scotland or Ireland.)

8. Nastúrtium *Br.* Water-Cress. Yellow-Cress.

Pod nearly cylindrical (sometimes short); *valves* concave, neither nerved nor keeled. *Seeds* in a double row. *Calyx* patent.—Named from *Nasus tortus*, a *convulsed nose*, an effect

supposed to be produced by the acrid and pungent quality of this plant.

1. N. *officinále* Br. (*common W.*); leaves pinnate, leaflets ovate subcordate sinuato-dentate, petals (white) twice as long as the calyx, pods linear. Sisymbrium Nasturtium *L.: E. B.* t. 855.

Brooks and rivulets, frequent. ♃. 5—10. — A well-known aquatic plant, and an excellent and wholesome salad. *Lower leaves* large, of 5—7 distant *leaflets*, the terminal one the largest and roundest; *cauline leaflets* subovate, sometimes oblong, all rather succulent, glabrous, more or less waved or toothed. *Pods* about an inch long, about as long as the pedicels, curved upwards. *Hypogynous glands* 4.

2. N. *sylvéstre* Br. (*creeping Y.*); leaves pinnate, leaflets lanceolate cut, those of the uppermost leaves nearly entire, root creeping, petals (yellow) twice as long as the calyx, pods narrow oblong or linear. Sisymbrium *L.: E. B.* t. 2324.

Water-sides and waste places, but not common; very rare in Scotland. ♃. 6—8. — *Roots* much creeping. *Stem* 1 foot high, angular, branched. *Rachis* often slender and zigzag. *Pedicels* patent; *pods* also patent or curved a little upwards, varying from 3 to 9 lines long (*De C.*), usually about the length of the pedicels, but often longer, sometimes shorter. *Hypogynous glands* 6.

3. N. *terréstre* Br. (*Marsh Y.*); leaves lyrato-pinnatifid unequally toothed, root simply fibrous, petals (yellow) not longer than the calyx, pods oblong turgid and the septum 2—4 times longer than broad. N. palustre *DC.* Sisymbrium terrestre. *E. B.* t. 1747.

Watery places. ⊙. 6—10. — One foot high, branched. *Pods* about as long as the spreading pedicels, ascending. Distinguished chiefly from the last by its fibrous root, pinnatifid not pinnate leaves, minute petals, and more turgid pods.

Tribe II. Alyssineæ. *Pouch with the dissepiment in the broadest diameter: valves flat or concave. Cot.* o=. (Gen. 9—12.)

9. Armorácia *Rupp.* Horse-Radish. Water-Radish.

Pouch elliptical or globose, many-seeded: the *valves* turgid, not nerved. *Filaments* simple. *Hypogynous glands* 6. *Seeds* not margined. *Calyx* patent. — So named by the Romans from *Armorica*, or Brittany, where it was supposed to grow abundantly.

1. A. *amphíbia* Koch (*great W.*); leaves oblong pinnatifid or serrate, root fibrous, petals (yellow) twice as long as the calyx, pouch 2—3 times shorter than the pedicel, stigma capitate. Nasturtium *Br.* Sisymbrium *L.: E. B.* t. 1840.

Watery places; not uncommon in England. ♃. 6—9. — *Stems* 2—3 feet high. If any *leaves* grow under water, they are deeply pinnatifid, otherwise only deeply serrate. *Pedicels* usually deflexed. *Style* as long as the oblong *germen*. *A. natans* (*Nasturtium* DC.) is closely allied; so also is *A. Americana* (*Nasturtium natans* Torr. and Gr.), but it has the white petals and peltate stigma of the next.

2. A. **rusticána* Baumg. (*common H.*); radical leaves oblong on long foot-stalks crenate, cauline ones elongato-lanceolate serrate or entire, root long cylindrical, petals (white) twice as long as the calyx, pouch 2—3 times shorter than the pedicel, stigma peltate. Cochlearia Armoracia *L.*: *E. B.* t. 2323.

Said to be wild near Swansea; also in some parts of the north of England, and in Scotland, but too often the outcast of gardens. ♃. 5. — *Roots* long, running deep into the ground, well known at our tables, and esteemed for their pungent flavour. *Leaves* much veined. *Fruit* seldom perfect.

10. Cochleária *Linn.* Scurvy-Grass.

Pouch oval or globose, many-seeded; the *valves* turgid, with a prominent nerve in the middle. *Filaments* simple. *Hypogynous glands* 4. *Seeds* not margined, tuberculate. *Calyx* patent. — Name: *cochlear*, a *spoon*, from the shape of the leaves.

1. C. *officinális* L. (*common S.*); pouch globose ovate or elliptical, radical leaves cordate at the base, usually reniform entire or sinuate, sometimes hastate. — *α*. larger, cauline leaves nearly all sessile, usually oblong or oval sinuate. *E. B.* t. 551. — *β*. smaller, lower stem-leaves usually deltoid and stalked. C. Groenlandica *L.*: *E. B.* t. 2403. — *γ*. radical leaves sometimes and cauline ones nearly all hastate stalked. C. Danica *L.*: *E. B.* t. 696.

α and *γ* on the sea-coast, in a stony or muddy soil, frequent; *β* on the Highland mountains. ☉ or ♃. 5—8. — The common variety exhibits, on the shores of the Frith of Clyde, all the variations noticed in the shape of the pouch, which is, moreover, often as large and veiny as in the figure of *C. Anglica*, in *E. B.* t. 552. The true radical leaves of our *var.* *γ* are perhaps always reniform; but having decayed, or been broken off, the lower cauline ones are mistaken for them.

2. C. *A'nglica* L. (*English S.*); pouch elliptical (large) veiny, radical leaves petiolate ovate or oblong entire mostly acute or tapering at the base sometimes subcordate, cauline leaves mostly sessile oblong sinuate or with a few coarse teeth. *E. B.* t. 552.

Margins of large rivers, at a distance from the open sea, perhaps not uncommon. Thames between London and Woolwich; Avon above Bristol; Mersey near Warrington. Cree near Newton Ste-

wart, Scotland. ⊙. 5—7. — *Pouch* generally larger than in the last, but certainly not more elliptical or veiny than what we refer to that species; *leaves* narrower and often more entire; *flowers* larger. The *radical leaves* are sometimes cordato-ovate, but usually oblong, never, so far as we have observed, broadly reniform or angled; but perhaps this and many other supposed species are only forms of the variable *C. officinalis*.

11. Kóniga *Br.* Koniga.

Pouch subovate; *valves* nearly plane; *cells* 1-ovuled and 1-seeded; seed-stalks with their base adnate to the dissepiment. *Calyx* patent. *Petals* entire (white). *Hypogynous glands* 8! *Filaments* simple. — Name: revived by Mr. Brown, from the *Konig* of Adanson, and altered by him to *Koniga* in order to commemorate the important services rendered to Botany by Mr. *König* of the British Museum.

1. K. **marítima* Br. (*Sea-side K.*, or *sweet-Alyssum*). Alyssum *Willd.*: *E. B.* t. 1729. Clypeola *L.*

Near the sea, but only where escaped or ejected from gardens. Budleigh Salterton, Devon; on the garden-wall at Newlyn, Mount's Bay, Cornwall; near Aberdeen. ♃. 8, 9. — *Stem* somewhat woody at the base. *Leaves* linear-lanceolate, hoary with bipartite appressed hairs. *Flowers* white and fragrant, honey-scented. The plant is much cultivated. — Mr. Brown admits another species with several alternate ovules in each cell; and some foreign authors have still more extended the genus. In several genera, as *Arabis*, the number of hypogynous glands varies from 4 to 8.

(*Alyssum calycinum* Willd. has been enumerated as a British species; but it is unquestionably a plant recently introduced, either with seed-corn or ballast, though now established in several parts of England and Scotland. It has simple filaments, and long subulate processes instead of hypogynous glands, by which, and its persistent calyx, it is known from the rest of the genus. *Berteroa incana* DC., said to have been found near Lewes and Weymouth, has also no claims to be considered indigenous.)

12. Drába *Linn.* Whitlow-grass.

Pouch or *pod* entire, oval or oblong; *valves* plane or slightly convex, 1-nerved at the base, nerved or veiny upwards; *cells* many-seeded. *Seeds* not margined. *Filaments* simple.—Named from δραβη, *acrid*, as are the leaves of many of this tribe.

* *Petals deeply cloven, white.* Eróphila *DC.*

1. D. *vérna* L. (*common W.*); scapes naked, leaves lanceolate somewhat toothed hairy. *E. B.* t. 586. Erophila vulgaris *DC.*—β. pouch swollen.

Frequent on walls, rocks, and dry banks. — β. abundant on shelv-

ing rocks on Ben Lawers, above the lake. ⊙. 3—6.—The var. β is a very singular one, found by ourselves and others, for many years, in the above locality, and never seen to vary: the *pouch* is as much inflated as that of *Subularia*.

** *Petals slightly emarginate, yellow. Style elongated.* Aizópsis *DC.*

2. D. *aizöides* L. (*yellow alpine W.*); scapes leafless glabrous, petals twice the length of the calyx, leaves lanceolate rigid glossy keeled and ciliated. *E. B.* t. 1271.

Walls and rocks near Swansea, S. Wales. ♃. 3, 4.—Remarkable for its bright yellow flowers and glossy leaves margined with hairs. The cultivated plant of this name is a variety with the *stamens* constantly scarcely longer than the *calyx*, and is *D. brachystemon* DC.: the Welsh plant has the stamens the length of the petals, as in wild Continental specimens, and the pouch glabrous.

*** *Petals slightly emarginate or entire, white. Style very short.*

3. D. *rupéstris* Br. (*Rock W.*); scape leafless or with rarely one leaf, pouch or pod oblong-oval, leaves plane lanceolate hairy. D. hirta *E. B.* t. 1338 (not *Linn.*).

Mountain summits; rare. Ben Lawers, Cairngorm, and Ben Hope; Scotland.. ♃. 7.—The slender perennial *root* penetrates deep among mosses and the crevices of rocks, bearing above many short *branches*, each crowned with a tuft of lanceolate, soft, plane, entire, or rarely obscurely toothed, hairy *leaves*; their margins ciliated; the hairs mostly simple, sometimes branched, on the surface not unfrequently stellate. *Scapes* several from the same root, 1—1½ inch high, slender, simple, stellato-pubescent. *Pedicels* short pubescent. *Cal.* mostly downy. *Pouch* oval-oblong, pubescent. In cultivation the leaves *become* more glabrous, the hairs on the margin longer and more rigid, and the scape 3—3½ inches high.

4. D. *incána* L. (*twisted-podded W*).; cauline leaves several lanceolate toothed hoary with starry pubescence, pod oblong-lanceolate somewhat twisted. *E. B.* t. 388.

Mountain rocks, in much less elevated situations and far more frequent than the last; in Wales, the N. of England, and Scotland. ♂. 6, 7.—*Stem* 4—6 inches to a foot or more high, sometimes throwing out lateral *branches*. Lower *leaves* frequently entire, upper ones deeply toothed, almost cut, acute. *Pods* erect, mostly glabrous.

5. D. *murális* L. (*Speedwell-leaved W.*); stem branched, leaves ovate obtuse amplexicaul toothed, pouch patent glabrous. *E. B.* t. 912.

Limestone mountainous countries, on rocks and walls. Craven, Yorkshire; Wardon hills, Bedfordshire; Emborough, Somersetshire. About Forfar, Edinb., and Chelsea, where it has escaped from gardens. Blarney Castle, Ireland. ⊙. 4, 5.—Six inches to one foot high. *Leaves* scabrous. *Pouch* elliptical, shorter than the pedicel.

Tribe III. THLASPIDEÆ. *Pouch compressed, with the dissepiment very narrow in the narrowest diameter, valves keeled or winged. Cot.* o=. (Gen. 13—16.)

13. THLÁSPI *Linn.* Penny-Cress.

Pouch laterally compressed, emarginate; *valves* winged at the back; *cells* 2—8-seeded. — Named from θλαω, to *flatten;* on account probably of its compressed *seed-vessels.*

1. T. *arvénse* L. (*Field P.* or *Mithridate Mustard*); pouch orbicular with a broad longitudinal wing, with a marginal nerve, cells about 6-seeded, seeds concentrically striate, leaves arrow-shaped toothed glabrous. *E.B.* t. 1659.

Fields and by road-sides, in various places; but not common. ☉. 5—7. — One foot high, branched above. *Flowers* extremely small, white. *Pouch* very large, with unusually broad wings.

2. T. *perfoliátum* L. (*perfoliate P.*); pouch obcordate entirely with a broad wing above, wing with a marginal nerve, cells 4—6-seeded, seeds smooth, style included within the notch, cauline leaves cordate somewhat toothed glabrous. *E.B.* t. 2394.

Limestone pastures; rare. Burford, Oxfordshire; Bourton, Upper Slaughter, and Naunton-Seven-Springs, near Stow-on-the-Wold, Gloucestershire. Stone walls about Kineton, Warwickshire. ☉. 4, 5. — *Raceme* elongated when in fruit.

3. T. *alpéstre* L. (*alpine P.*); pouch somewhat obovate retuse winged above, nerve of the wing obsolete, cells 2—4-seeded, style as long as the notch or exserted, stamens as long as the petals, cauline leaves cordato-sagittate, stem simple. *E. B.* t. 81. *α.* racemes of fruit elongated, style scarcely longer than the notch of the oblong-obovate pouch.—*β.* racemes of fruit oblong, style much longer than the notch of the triangular obcordate pouch. T. occitanum *Jord.*—*γ.* racemes of fruit oval or oblong, style much longer than the shallow notch of the oboval pouch. T. virens *Jord.*

Mountain pastures, rare. *α.* Teesdale; Thornhaugh, Northumberland. Glen Isla. Clova. — *β.* Settle, Yorksh.; Llanrwst, Caernarvonshire. *γ.* Matlock, Derbyshire. ♃. 6—8. Upon the above slender distinctions has this species been split into three, *T. occitanum* being intermediate between the extreme forms.

14. HUTCHÍNSIA *Br.* (not of *Agardh.*) Hutchinsia.

Pouch elliptical, entire; the *valves* keeled, without wings; *cells* 2-seeded. *Filaments* simple. — Named in honour of the

late Miss *Hutchins*, of Bantry, Ireland, who explored most successfully the Botany of her native country, and added many new species to its Cryptogamia.

1. H. *petræ'a* Br. (*Rock H.*); leaves pinnate, segments entire, petals scarcely longer than the calyx, pouch obtuse at both extremities, stigma sessile. Lepidium *E. B.* t. 111.

Limestone rocks; west of England, and Wales, and Yorkshire. Wall of Eltham churchyard, Kent, probably introduced. ⊙. 3—5. —2—4 inches high. This genus has the *pouch* of a *Teesdalia*, but the stamens of *Thlaspi*: the British species has the appearance of the former; while most foreign ones, if they really belong to the genus, have that of the latter.

15. Teesdalia *Br.* Teesdalia.

Pouch emarginate; the *valves* keeled; the *cells* 2-seeded. *Filaments* having a little scale within at the base.—Named in honour of Mr. *Robert Teesdale*, a Yorkshire botanist.

1. T. *nudicaúlis* Br. (*naked-stalked T.*); petals unequal. Iberis *E. B.* t. 327.

Sandy and gravelly banks in many places. ⊙. 4—6.—*Leaves* almost entirely radical, lyrato-pinnatifid. *Stems* 2—4 inches high, with sometimes 1—2 small entire or cut *leaves*. *Flowers* white, two of the *petals* nearly three times longer than the other two.

16. Ibéris *Linn.* Candy-tuft.

Pouch emarginate; *valves* keeled and winged; *cells* 1-seeded. *Petals* unequal.—Named from *Iberia*, or *Spain*, where many of the species grow.

1. I. **amára* L. (*bitter C.*); herbaceous leaves lanceolate acute somewhat toothed glabrous, flowers racemose, pouch orbicular with a narrow notch. *E. B.* t. 52.

Chalky fields, rare, but either the outcast from gardens or introduced with seed-corn; now not unfrequent in Oxfordshire and Berkshire. ⊙. 7.—*Stems* spreading, often a foot high. *Leaves* very variable in their toothing. Whole plant, as its name imports, very bitter.

Tribe IV. Cakilineæ. *Fruit without valves or a dissepiment, jointed, each joint with one or more seeds, all but the upper one often abortive.* *Cot.* o=. (Gen. 17.)

17. Cakíle *Gært.* Sea-Rocket.

Fruit short, angular, of 2, 1-seeded indehiscent joints; the upper joint deciduous bearing an upright sessile *seed*, the lower one with an abortive or pendulous *seed*.—Name: an

old Arabic word, applied probably to this or some allied genus.

1. C. *marítima* Willd. (*purple S.*); joints of the pouch two-edged, the upper one with two teeth at the base, leaves fleshy pinnatifid somewhat toothed. Bunias Cakile *L.: E. B.* t. 231.

Sandy sea-shores, frequent. ⊙. 6, 7.—Bushy; *branches* crooked, and, as well as the whole plant, succulent. *Flowers* purplish, rarely white. *Fruit* thick, fleshy, at length somewhat woody; the upper joint is in reality the *beak* of the fruit, the *pouch* itself being usually abortive.

SUB-ORD. II. NOTORRHIZEÆ. Cotyledons incumbent (o‖).

Tribe V. SISYMBRIEÆ. *Pod elongated, with the valves convex or keeled, dissepiment linear. Cot.* o‖. (Gen. 18—21.)

18. HÉSPERIS *Linn.* Dame's Violet.

Pod 4-sided or 2-edged. *Stigma* nearly sessile; the lobes elliptical, connivent. *Cal.* erect.—Named from ἑσπερος, the *evening;* at which time the flowers yield a powerful fragrance.

1. H. *matronális* L. (*common D.*); stem erect, leaves ovato-lanceolate toothed, limb of the petals obovate, pods erect torulose their margins not thickened. H. inodora *L.: E. B.* t. 731.

Hilly pastures, in several parts of Great Britain, but perhaps always escaped from cultivation. ⊙. 5—7.

(*Malcolmia maritima* Br. has been found near Deal, Kent, by Miss Harvey, and in Jersey by the late Dr. R. Graham, but in neither place truly wild.)

19. SISÝMBRIUM *Linn.* Hedge-Mustard.

Pod rounded or 6-angular; *valves* convex or 3-angled 3-nerved (rarely with the lateral nerves inconspicuous or wanting). *Hypogynous glands* none between the longer filaments. *Seeds* smooth, their *stalks* slender. *Stigma* entire. *Cal.* slightly spreading, equal at the base.—Name: σισυμβριον, given by the ancients to several plants, one of which is supposed to be a kind of cress; perhaps from συν, *with*, and βρωμος, *food*, because so eaten.

1. S. *officinále* L. (*common H.*); pods subulate pubescent close-pressed to the main stalk, leaves runcinate hairy, stem hispid. Erysimum *L.: E. B.* t. 735.

Waste places and by way-sides, plentiful. ⊙. 6, 7.—One to two feet high, branched. The deep and cut serrate lobes are not always sufficiently decurved to constitute a *runcinate leaf;* the terminal lobe

is very large, roundish in the lower *leaves*, and oblong in the upper ones. *Flowers* very small, pale yellow.

(*S. polyceratium* L. has been found about Bury St. Edmunds, but is certainly not indigenous: in it the pods are subulate as in the last, but spreading and usually three together, and sessile in the axils of a leaf or leaf-like bractea.)

2. S. *Irio* L. (*broad H., London Rocket*); leaves runcinate toothed and as well as the stem glabrous, pods terete nearly erect. *E. B.* t. 1631.

Waste places, chiefly about London, where it covered the ground immediately after the great fire in 1666. Faulkbourn, Essex. Berwick-upon-Tweed. Dublin. ☉. 7, 8. — *Flowers* yellow. *Pods* 2 inches long, erect, about four times longer than the pedicels.

3. S. *Sophia* L. (*fine-leaved H.*, or *Flax-weed*); leaves doubly or trebly pinnatifid, lobes linear or linear-oblong, petals shorter than the calyx. *E. B.* t. 963.

Waste places, among rubbish: frequent in England, more rare in Scotland. ☉. 6—8. — Two feet high, branched. *Flowers* small, yellow. *Pods* terete, linear, slender, erect, but not appressed, about three times longer than the somewhat patent *pedicels*.

4. S. *thaliánum* Hook. (*common Thale-cress*); leaves somewhat toothed downy, radical ones oblong subpetiolate, stem branched, pods ascending terete with 4 angles. Arabis *L.*: *E. B.* t. 901.

Walls, dry banks, and gravelly soils, common. ☉. Spring and autumn. — Six to ten inches high, slender, with few *leaves*, and those mostly radical. *Flowers* small, white. *Pods* twice the length of the spreading pedicels; valves convex with only one conspicuous nerve, as in *Arabis*, with which it agrees better in habit; but the *cotyledons* are incumbent, and the *pods* are not compressed; from *Erysimum* it differs by the hairs on the leaves being spreading and not appressed.

20. Alliária *Adans.* Garlic-Mustard.

Pod rounded; *valves* with one conspicuous nerve and two slender branched nerves or veins. *Hypogynous glands* between the longer filaments. *Seeds* striate, their *stalks* flat and winged. *Stigma* entire. *Cal.* slightly spreading, equal at the base. — Named from *Allium*, or *garlic*, which its leaves resemble in their odour.

1. A. *officinális* DC. (*common G., Jack-by-the-hedge*, or *Sauce-alone*). Erysimum Alliaria *L.*: *E. B.* t. 796.

Hedge-banks and waste places. ♂. 5, 6. — 2—3 feet high, branched. *Leaves* large, veined, heart-shaped, stalked, sinuato-dentate. *Flowers* white. *Pods* erect, on spreading *pedicels*. Were it not for the *seed-stalks*, this might be placed in *Sisymbrium*.

21. Erýsimum *Linn.* Treacle-Mustard.

Pod 4-sided; *valves* 1-nerved. *Hypogynous glands* usually 2 opposite the placentas and between the longer stamens. *Seeds* smooth not margined, their stalk filiform. *Stigma* entire, or emarginate with the lobes patent. *Cal.* erect. (Pubescence appressed.)—Named from ερυω, to *cure*, on account of the supposed virtues of the plant.

1. E. *cheiranthoides* L. (*Worm-seed T.*); leaves lanceolate entire or slightly toothed with stellato-tripartite hairs, pods nearly erect 2—3 times longer than the spreading pedicels, stigma almost undivided nearly sessile. *E. B.* t. 942.

Fields, gardens, and waste places. ⊙. 6—8.—One to two feet high, branched. *Flowers* small, yellow. *Glands* between the larger stamens 2 lobed.

2. E. * *orientale* Br. (*Hare's-ear T.*); leaves cordato-amplexicaul, radical ones obovate, all glabrous glaucous and entire, stigma entire. Brassica *L.: E. B.* t. 1804.

Fields and cliffs near the sea; Suffolk, Sussex. ⊙. 5—8.—*Flowers* white or cream-coloured. *Calyx* slightly bisaccate at the base. *Glands* wanting between the longer stamens, but the opposite sepals glandular at the base, thus differing from the genus as limited by C. A. Meyer.

Tribe VI. Camelineæ. *Pouch with the valves more or less convex or dorsally compressed, dissepiment oval or oblong. Cot.* o‖. (Gen. 22—23.)

22. Camelína *Crantz.* Gold-of-Pleasure.

Pouch obovate or subovate; *valves* inflated, with a prominent nerve at the base; *cells* many-seeded. *Filaments* simple.—Named from χαμαι, *dwarf* or *humble*, and λινον, *flax*.

1. C. * *sativa* Cr. (*common G.*); pouch obovate margined, valves hemisphærical, stigma simple, calyx erect, leaves lanceolate sagittate. Alyssum *E. B.* t. 1254.

Fields, occasionally among flax, with which it has been imported. ⊙. 6, 7.—*Stem* 2—3 feet high, panicled above, usually more or less pubescent. *Leaves* nearly quite entire, sometimes slightly toothed. *Flowers* small, yellow. *Pouches* very large, on long stalks. *Seeds* scabrous.

23. Subulária *Linn.* Awl-wort.

Pouch oval, pointless; *valves* turgid; *cells* many-seeded. *Cotyledons* linear, curved.—Named from *subula*, an *awl*; the leaves being subulate or awl-shaped.

1. S. *aquatica* L. (*Awl-wort*). *E. B.* t. 732.

Shallow margins of alpine lakes, not very frequent. ♃. 7. — *Roots* of numerous, long, white fibres. *Leaves* few, radical, awl-shaped, 2—3 inches long. *Scape* 3—4 inches high. *Flowers* small, appearing even under water. *Pouch* nearly approaching that of *Draba*, but with more turgid and convex *valves*, having one conspicuous middle nerve, and sometimes two fainter ones. *Embryo* with its *cotyledons* linear, long; and the curvature takes place, not at the very base of the cotyledons as in most other *Cruciferæ*, but above the base, so that a section made below this exhibits the appearance of four cotyledons without a radicle.

Tribe VII. LEPIDINEÆ. *Pouch with the valves keeled or convex; or fruit short and indehiscent, 2-celled: dissepiment very narrow. Cot.* o‖, *rarely* (*in* Lepidium) o=. (Gen. 24—26.)

24. CAPSÉLLA *De Cand.* Shepherd's Purse.

Pouch laterally compressed, obcordato-cuneate (or elliptical); the *valves* navicular, without wings; *cells* many-seeded. — Name: the diminutive of *capsula*, a *capsule* or *little box*.

1. C. *Bursa Pastóris* DC. (*common S.*); pubescent or hairy, stem-leaves sessile lanceolato-sagittate, pouch obcordato-cuneate. Thlaspi *L.*: *E. B.* t. 1485.

Corn-fields and waste places, everywhere, most abundant. ☉. The whole summer. — Very variable, from 3 inches to 1—2 feet high. *Leaves* all generally toothed and rough with hairs; *radical* ones more or less pinnatifid. *Flowers* small.

25. LEPÍDIUM *Linn.* Pepper-wort.

Pouch with the cells 1-seeded; the *valves* keeled or winged. *Petals* equal. *Cot.* sometimes o=. — Name: λεπις, a *scale*, from the form of the little pouches.

* *Style minute.*

1. L. *latifólium* L. (*broad-leaved P.*); leaves ovato-lanceolate undivided serrate or entire, pouch oval entire downy with a minute style. *E. B.* t. 182.

Wet shady places, near the sea and salt-marshes; in Norfolk, Essex, and Yorkshire. Weems and Donibristle, in Fifeshire, but apparently only naturalized. ♃. 7, 8. — *Stem* 2—3 feet high, branched, erect, with large *leaves*. *Flowers* numerous, small, in many terminal and axillary clustered *racemes*.

2. L. *ruderále* L. (*narrow-leaved P.*); flowers diandrous without petals, radical leaves pinnatifid, those of the branches linear entire, pouch roundish-oval emarginate patent with a minute style. *E. B.* t. 1595.

Waste places near the sea, and among rubbish. ☉. 5, 6. — The

typical form of the plant, with *petals* and six *stamens*, is as yet unknown, unless described as a distinct species. *Stem* sometimes a foot high, much branched. *Seed-vessels* numerous. *Cotyledons* incumbent, as in most of this genus; whereas those of its very near affinity, *L. Virginicum*, are accumbent.

*** Style as long as the pouch.*

3. L. * *Drába* Br. (*Whitlow P.*); leaves amplexicaul broadly oblong or lanceolate entire or toothed, pouch cordate entire at the apex crowned with a style about its own length, valves turgid. *E. B. S.* t. 2683.

Fields and hedges, rare. Swansea; at St. Peter's and Ramsgate, Isle of Thanet; banks of the railway at Forest-hill, Surrey; left bank of the Dee below Chester. ♃. 5, 6.— *Stem* 8—10 inches to a foot high, branched, with large distant *leaves* and almost umbellate *corymbs* of numerous small *flowers*. *Pedicels* very long.

**** Style filiform, much shorter than the pouch.*

4. L. *campéstre* Br. (*common Mithridate P.*); pouch ovate emarginate winged rough with minute scales, style scarcely longer than the notch, cauline leaves sagittate toothed. Thlaspi *L.*: *E. B.* t. 1385.

Corn-fields and dry gravelly soils; not uncommon in England and Scotland. ☉. 5—8.— *Stems* solitary, erect, 10—12 inches high, corymbosely branched above. Lower *leaves* almost spathulate, all slightly pubescent, as well as the *racemes* and *pedicels*. *Pouch* curiously scaly.

5. L. *Smíthii* Hook. (*smooth Field P.*); pouch ovate emarginate winged glabrous occasionally with a few minute scales on the back, style twice as long as the notch, cauline leaves sagittate toothed. — Lepidium hirtum *Hook. Scot.* Thlaspi hirtum *Sm.* (not *L.*): *E. B.* t. 1803.

Borders of fields and hedges in Norfolk and Suffolk. Caernarvonshire and Anglesea. Frequent, particularly in the west of Scotland. Belfast and Dublin, plentiful. ♃? 4—8.— *Stems* many from the same biennial or perhaps perennial root, 6 inches to more than a foot high, diffuse, irregularly branched. Much resembling the last, but truly distinct. *Pouch* with a much longer *style*, quite glabrous, and smooth or even; except that sometimes on the middle of the back there are a few minute scales. When glabrous it is the *L. heterophyllum* of Bentham, from the Pyrenees; our common form is found, however, in the north-west of France.

26. Senebiéra *De Cand.* Wart-Cress.

Fruit broader than long, 2-celled, without *valves* or wings; *cells* 1-seeded. *Cotyledons* long, linear, curved.— Named in honour of *M. Senebier*, an eminent Genevese physiologist.

(We adopt *Senebiera* in place of *Coronopus*, in consequence of its being generally preferred; but the latter appellation given by Gærtner is certainly the oldest; and although it may not happen to be the precise plant of the ancients, many other received names are in the same predicament.)

1. S. *Corónopus* DC. (*common W., Swine's-cress*); fruit undivided crested with little sharp points, style prominent. Coronopus Ruellii *Sm.: E. B.* t. 1660.

Waste ground, not unfrequent in England. Rare in Scotland. ⊙. 6—9. — A much branched spreading weed. *Leaves* bipinnate, their segments linear. *Flowers* very small, white, in lateral axillary corymbs. *Pouch* large in proportion to the flower, curiously crested. *Cotyledons* (in the whole genus) nearly as in *Subularia*.

2. S. *didyma* DC. (*lesser W.*); fruit emarginate of two wrinkled lobes, style very short. Coronopus *Sm. Fl. Brit.* Lepidium *E. B.* t. 248.

Waste ground near the sea, in the south and south-west of England; about Exeter, Truro, Penrhyn, and Milfordhaven. Shore near Caernarvon. South of Ireland. ⊙. 7—9. — *Leaves* once or twice pinnate.

Tribe VIII. ISATIDEÆ. *Fruit short, 1-celled, 1-seeded, with keeled scarcely dehiscent valves. Cot.* o‖. (Gen. 27.)

27. ISÁTIS *Linn.* Woad.

Fruit 1-celled, 1-seeded, laterally compressed; *valves* keeled or winged, eventually separating at the apex. *Hypogynous glands* between the longer stamens. — Name: ισατις of the Greeks.

1. I. * *tinctória* L. (*Dyer's W.*); fruit glabrous obovate-oblong about three times longer than broad, radical leaves oblong crenate, those of the stem sagittate. *E. B.* t. 97.

Cultivated fields, about Ely, Durham, &c. ♂. 7.—*Flowers* yellow. Cultivated for the sake of the blue dye which it yields, hence called *Glastum* by the Romans, from *glas*, the Celtic for *blue*. Woad seems to take that name from *Guadum*, now *Gualdo*, in Italy, where it was formerly extensively cultivated.

SUB-ORDER III. ORTHOPLOCEÆ. Cotyledons conduplicate (o>>).

Tribe IX. BRASSICEÆ. *Pod elongated. Dissepiment narrow.* Cot. o>>.

28. BRÁSSICA *Linn.* Cabbage, Turnep, Navew.

Pod 2-valved (with a sterile, or one- or several-seeded beak).

Seeds in a single row. *Calyx* erect. — Name derived from the Celtic *bresic* (modern Gaelic *praiseach*), a kind of cabbage, or rather pottage, made of it.

* *Valves of pod* 1-*nerved, veiny; beak usually sterile.*

1. B. *olerácea* L. (*Sea C.*); root caulescent cylindrical fleshy, all the leaves glabrous glaucous waved and lobed, upper ones oblong sessile. *E. B.* t. 637.

Cliffs by the sea: Devonshire, Dover, Wales, Cornwall, Yorkshire, and in the Frith of Forth. ♂. 5—8. — Varying in height, 1—2 feet. *Leaves* thick, subcarnose, the uppermost undivided, but toothed. *Flowers* large, yellow. — The origin of our garden *Cabbage.*

2. B. **Nápus* L. (*Rape*, or *Cole-seed*); leaves glabrous somewhat glaucous especially on the under side, lower ones lyrate toothed, upper cordato-lanceolate amplexicaul, pods spreading. *E. B.* t. 2146.

Corn-fields and waste ground, frequent in England. ♂. 5, 6.— 1—2 feet high. *Root* slender or fusiform. *Lobes* of the lower *leaves* crenate, upper leaves entire more glaucous. *Petals* yellow, rather small. *Pods* torulose. — The slender-rooted variety is cultivated for the oil produced by its seeds, which after pressure are formed into cakes, and used as manure and for feeding cattle; but the slender-rooted variety of *B. campestris* is much more employed for the same purpose on the Continent, under the name of *Colsa.*

3. B. *campéstris* L. (*common wild N.*); upper stem-leaves cordate acuminate amplexicaul glabrous, lower and radical ones lyrate dentate subhispid glaucous, pods erect. *E. B.* t. 2234.

Corn-fields and sides of rivers and ditches, in many places. ☉ or ♂. 6, 7. — *Root* fusiform, slender and annual in the wild plant, often turnep-shaped and biennial in the cultivated one. *Stem* hispid below. *Flowers* yellow. *Pod* cylindrical or obscurely 4-angular; *seeds* forming slight prominences; beak awl-shaped, striate, sometimes with a single *seed.* — Apparently the origin of the *Swedish Turnep* of our agriculturists, and in Scotland it has never been found except where the Swedish Turnep had been previously cultivated.

4. B. **Rápa* L (*common T.*); root orbicular or oblong fleshy, radical leaves lyrate scabrous not glaucous, lower stem-leaves incised, upper ones cordato-ovate acuminate amplexicaul smooth. *E. B.* t. 2176.

Borders of fields and waste places. ♂. 4—7. — Varying exceedingly in height, according to soil. Upper *leaves* subglaucous; all more or less toothed. Although this and the last two are readily distinguished in cultivation by their radical leaves alone, there are

strong grounds for considering all to be varieties, as they scarcely differ in other respects.

** *Valves of pod* 3-*nerved; beak* 1—3-*seeded.*

5. B. *Monénsis* Br. (*Isle-of-Man* or *Wallflower C.*); leaves stalked all deeply pinnatifid, lobes oval oblong unequally toothed, in the upper ones linear.—*a.* stems prostrate glabrous or hispid at the base. Sisymbrium *L.*: *E. B.* t. 962.—*β.* stems erect more leafy and hispid. B. cheiranthus *Vill.*: *Brit. Fl.* ed. 6. Sinapis *Koch*: *E. B. S.* t. 2821.

On the isles and shores of the Clyde, and on both sides of the Irish Channel, Argyleshire, Ayrshire, &c.; Isle of Man. *β.* Jersey. ♃. 5—8.—*Leaves* usually glabrous, except on the *petioles*. *Stems* slightly hispid, greedily eaten by sheep and cattle, and probably deserving of being cultivated as fodder.

29. Sinápis *Linn.* Mustard.

Pod 2-valved (with a sterile or one- or several-seeded beak). *Seeds* in a single row. *Cal.* patent.—Named from the Greek σιναπι, the *common Mustard*, which again Théis derives from the Celtic *Nap* (modern Gaelic *Neup*), a *Turnep*.

* *Valves of pod* 1-*nerved.*

1. S. *nígra* L. (*common M.*); pods appressed glabrous tetragonous, beak sterile short subulate, upper leaves linear-lanceolate entire glabrous. *E. B.* t. 969. Brassica *Koch.*

Under hedges and in waste places, in England, very rare in Scotland (if wild). ☉. 6—9.—*Stem* 3—4 feet high. Lower *leaves* large, lyrate, rough. *Pod* with a short empty *beak*, or rather only the persistent *style* and *stigma* at its summit; its *valves* bluntly but so strongly 1-nerved as to make it quadrangular, the four sides being flat and without any prominent veins.—The seeds yield the mustard of our tables; of which the best is that from which the oil has been expressed, as originally prepared by Mrs. Clements of Durham.

2. S. *incána* L. (*hoary M.*); pods appressed terete prominently veined with a short 1-seeded beak, leaves lyrate hispid, cauline ones linear-lanceolate, stem much branched. Erucastrum *Koch*: *E. B. S.* t. 2843.

Jersey and Alderney, but rare. ♂. 7, 8.—*Pods* glabrous or hairy, with a glabrous beak and single seed. *Seeds* ovate, compressed; on which account it has been removed to the genus *Erucastrum*, but it is less allied to *Brass. Erucastrum*, the type of that genus, than to *Sin. nigra.*

** *Valves of pod* 3—5-*nerved.*

3. S. *arvénsis* L. (*wild M.*, *Charlock*); pods glabrous with many angles turgid and knotty longer than the slightly compressed beak, stem and leaves bristly. *E. B.* t. 1748.

Corn-fields, too frequent. ⊙. 5—8. — *Stem* 1—2 ft. high, rough. *Flowers* rather large, yellow. *Calyx* very spreading. *Beak* of the pod usually empty, sometimes with one seed.

4. S. *álba* L. (*white M.*); pods hispid turgid shorter and slightly narrower than the flat ensiform beak, leaves pinnatifid. *E. B.* t. 1677.

Waste places, frequent in England; more rare in Scotland. ⊙. 6, 7. — *Stem* 1—1½ ft. high, sparingly hairy or glabrous. *Leaves* usually glabrous, the lobes variously cut and toothed, or erose. *Flowers* large, yellow. Well distinguished from the other British species by its long, thin beak, which contains a single seed.

30. Diplotáxis *De Cand.* Rocket.

Pod linear, compressed (with usually an empty beak), 2-valved; the *valves* slightly convex, 1-nerved. *Seeds* (oval or oblong) in two rows. *Calyx* patent. — Named from διπλοος, *double*, and ταξις, a *series*, in allusion to the two rows of seeds.

1. D. *tenuifólia* DC. (*Wall R.*); pods shortly beaked erect, pedicels spreading, stems erect leafy glabrous somewhat woody at the base, leaves lanceolate very acute pinnatifid or bipinnatifid glabrous. Sisymbrium *L.: E. B.* t. 525. Sinapis *Br.*

Old walls and heaps of rubbish about great towns, in the south, south-west, and east of England: as London, Bristol, Yarmouth, Chester, Tynemouth, and Shields. St. David's, Fifeshire, but introduced with ballast. ♃. 6—9. — *Root* thick. *Stem* 1—1½ ft. high, glabrous, almost woody at the base. *Flowers* large, yellow. This plant smells disagreeably.

2. D. *murális* DC. (*Sand R.*); pods shortly beaked erect, pedicels spreading, stem herbaceous hispid spreading leafy only at the base, leaves sinuate glabrous. Sisymbrium *L.: E. B.* t. 1090. Sinapis *Br.*

Sandy barren fields near the sea, in the south and south-west of England; Isle of Thanet, and below Bristol; also at Tynemouth and Shields. Edinburgh and Dunfermline, but not truly wild. ⊙. 8, 9. — Very like the preceding, but annual, and much smaller and less leafy.

Tribe X. Velleæ. *Pouch with the valves convex; dissepiment broad. Cot.* o>>. (Gen. 31.)

31. Vélla *Linn.* Cress-rocket.

Pouch swollen, 2-celled, with a dilated, flat, winged *style*, twice as long as the *valves*. *Seeds* 4 in each cell. *Cal.* erect. — Named from *veler* in Celtic (in modern Gaelic *biolar*), the *cress*.

1. V. **ánnua* L. (*annual C.*); leaves bipinnatifid, fruit pendulous. *E. B.* t. 1442. Carrichtera Vellæ *DC.*

Sandy fields. Salisbury Plain: *Lawson.* ☉. 6.—Not found since the time of Ray.

Tribe XI. RAPHANEÆ. *Fruit with the pod or lower part abortive and stalk-like, consisting of a beak without valves, divided transversely into* 1-*seeded cells sometimes separating.* Cot. o>> (Gen. 32, 33.)

32. CRÁMBE *Linn.* Kale.

Fruit without valves, the upper joint globose, deciduous, bearing one pendulous *seed* upon a stalk arising from the bottom of the cell; lower joint resembling a pedicel. — Name: κραμβη of the Greeks.

1. C. *marítima* L. (*Sea K.*); longer filaments forked, fruit pointless, leaves roundish sinuated waved toothed glaucous, and as well as the stem glabrous. *E. B.* t. 924.

Sea-coast in sandy or stony soils in various places, but not very general. ♃. 6.—Root thick, fleshy. *Flowers* white. Well known as an excellent culinary vegetable when cultivated and blanched.

33. RÁPHANUS *Linn.* Radish.

Fruit without valves, or a dissepiment, with a long style, several-seeded. *Cal.* erect.—Name: ρα, *quickly*, and φαινομαι, to *appear;* from its rapid vegetation.

1. R. *Raphanístrum* L. (*wild R.*, or *jointed Charlock*); leaves simply lyrate, fruit jointed, style 2—3 times longer than the last joint. *E. B.* t. 856.

Corn-fields, frequent. ☉. Summer and autumn.—*Stem* 1—1½ foot high. *Leaves* stalked, rough. *Flowers* yellow, rarely reddish, veined.

2. R. *marítimus* Sm. (*Sea R.*); leaves interruptedly lyrate, fruit jointed striate, style scarcely longer than the last joint. *E. B.* t. 1643.

Beachy-head, Sussex. Jersey and Guernsey. Sea-shore in Bute, Argyleshire, and Galloway; Scotland. ♂. 6.—*Stem* 3—4 feet high. All the *leaves* rough and the lobes toothed. *Flowers* rather large, yellow. "Pods larger than in the preceding, and (especially when dry) channelled with fewer, broader, and deeper furrows, and sharp intermediate prominences; the beak also is smoother, as is the upper part of the plant generally." *J. E. Bowman.* Is it really a distinct species? *R. Landra* DC. only differs by the longer style, and is intermediate. The character derived from the leaves sometimes disappears.

Ord. VII. RESEDACEÆ *De Cand.*

Calyx of several narrow sepals. *Petals* unequal, mostly laciniated. *Stamens* 10—24, inserted upon a glandular irregular disk. *Ovary* sessile, 3—4-lobed, 1-celled, with 3—4 parietal placentas bearing many *seeds* (or of 4—6 verticillate 1-celled carpels). *Stigmas* sessile, one to each placenta and alternate with it. Fruit opening in an early stage at the extremity along the line of the placentas.—*Reseda odorata* is the sweet Mignonnette of our gardens.

1. Reséda *Linn.* Dyer's Rocket. Mignonnette.

Cal. of 1 piece, many-parted. *Pet.* more or less divided and unequal. *Caps.* of 1 cell, opening at the top. *Stigmas* 3—4. —Name from *resedo*, to *calm*, from its supposed sedative qualities.

1. R. *Lutéola* L. (*common D.*, *Yellow-weed* or *Weld*); leaves long lanceolate undivided, calyx 4-partite, stigmas 3. *E. B.* t. 320.

Waste places; frequent on a chalky soil. ☉. 6—8.—*Stem* 2—3 feet high, branched. *Racemes* long, of numerous yellowish *flowers*, with prominent *stamens*. *Nectary* large, green, crenate, on the upper side of the *flower*; 3 of the *petals* 3-cleft, segments linear; two lower *petals* entire; *capsules* broad, depressed. — Used in dyeing woollen stuffs yellow.

2. R. *lútea* L. (*base D.*, *wild M.*); leaves 3-cleft or pinnatifid, calyx 6-partite, petals 6 very unequal, stigmas 3. *E. B.* t. 321.

Waste places and chalky hills. ☉ or ♃. 6—8. — *Leaves* very variable, some bipinnatifid, lower ones often pinnate. *Flowers* deeper yellow than in the last. Two upper *petals* with 2 wing-like lobes, lateral ones unequally bifid, lower ones entire. *Capsule* oblong, wrinkled.

3. R. **fruticulósa* L. (*shrubby base D.*); leaves all pinnate waved glaucous, calyx 5-partite, petals 5 nearly equal trifid, stigmas 4. *E. B. S.* t. 2628.

Cornwall. Weston-super-mare, Somersetshire. Unenclosed sandhills, Bootle, 4—5 miles from Liverpool. Coventry, Warwickshire. The following stations, either for this or *R. alba*, have also been communicated: —about Dublin; between Cork and Glanmire; and near Gosport. ♂ or ♃. 6.—*R. alba* of Continental writers chiefly differs from this by having the *calyx* 6-partite, and 6 *petals*: Mr. *Borrer*, however, can only distinguish the *R. alba* of the Linnean Herbarium by its shorter flower-stalks, more cylindrical *racemes*, and the terminal lobe of its *leaves* more similar to the rest (less dilated than that of *R fruticulosa*): —a specimen from Mr. Borrer has the *calyx* 5-partite.

Ord. VIII. CISTACEÆ *Juss.*

Sepals 3, with a twisted æstivation, with usually 2 outer smaller ones. *Petals* 5, deciduous, with a twisted and crumpled æstivation. *Stamens* numerous. *Ovary* 1, 1- or many-celled. *Style* 1. Stigma capitate, simple. Capsule of 3—5, rarely 10 valves. *Seeds* numerous. *Embryo* spiral or curved, in a mealy *albumen.*—Shrubs or herbaceous *plants abounding in Southern Europe and Northern Africa, with handsome, generally fugacious, flowers.*—*Cistus Creticus* affords the balsam called *Gum Ladanum.* The stamens of *Helianthemum* expand after being suddenly compressed between the finger and thumb.

1. Heliánthemum *Tourn.* Rock-rose.

Sep. 5, of which 3 are equal and 2 outer ones smaller. *Caps.* 3-valved.—Named from ἡλιος, the *sun*, and ανθος, a *flower*; the same as *Helianthus.*

1. H. *cánum* Dun. (*hoary dwarf R.*); shrubby, leaves without stipules opposite ovate or oblong petiolate flat hoary beneath, racemes terminal bracteate, style twisted at the base reflexed, at the apex inflexed, seeds blackish. Cistus *L.* C. marifolius, *E. B.* t. 396.

Rare; alpine rocks in the north of England, Lancashire, Westmoreland, on Cronkley Fell in Yorkshire, and in Wales. Western Isles of Arran, Ireland. ♃. 5—7.—A low shrubby plant, with hoary *leaves*, and rather small yellow *flowers.* *Cistus marifolius, Anglicus, Œlandicus,* and *Italicus* of Linnæus appear all to be mere *vars.*

2. H. *guttátum* Miller (*spotted annual R.*), annual erect, leaves oblongo-lanceolate or linear, the lower opposite without stipules, the upper alternate, style straight very short.—*α.* racemes without bracteas. Cistus *L.*: *E. B.* t. 544.—*β.* racemes bracteate. H. Breweri *Planch.* in Lond. Journ. Bot. iii. p. 618. t. 21.

Very rare. *α.* Three-Castle Head, Cork. Jersey. *β.* Holyhead mountain. ☉. 6—8.

3. H. * *ledifólium* Willd. (*Ledum-leaved R.*); herbaceous slightly downy, leaves with stipules lanceolate, flower-stalks solitary opposite to the leaves shorter than the calyx erect in fruit, styles straight, capsule polished. Cistus *L.*: *E. B.* t. 2414.

Very rare; on Brean downs, Somersetshire; *Huds.* ♃. 6, 7.—We have never seen British specimens of this plant, and it is generally supposed that Hudson mistook *H. polifolium* for it.

4. H. *vulgáre* Gært. (*common H.*); shrubby procumbent, leaves with stipules opposite ovate or oblong nearly flat green above, racemes solitary terminal bracteate, pedicels elongated

deflexed in fruit, style bent at the base somewhat clavate at the apex, seeds black. Cistus Helianthemum *L.* : *E. B.* t. 1321. C. tomentosus, *E. B.* t. 2208. C. Surrejanus *L.*, (petals lanceolate often cut) : *E. B.* t. 2207.

Frequent in dry pastures, especially in a chalky or gravelly soil. ♃. 7—9.

5. H. *polifólium* Pers. (*white R.*); shrubby procumbent hoary, leaves with stipules opposite ovato-oblong or oblong-linear more or less revolute at the edge, racemes solitary terminal bracteate, pedicels elongated and deflexed in fruit, style bent at the base somewhat clavate at the apex, seeds black. H. Apenninum *DC.* Cistus *L.*: *E. B.* t. 1322.

Rare; in the south of England. Brean downs, Somersetshire; Torquay and Babbicombe, Devonshire. ♃. 7, 8. — *Flowers* white. In gardens all intermediate states may be observed between this and the last, of which, with about 50 other supposed species, it is probably a mere variety.

Ord. IX. VIOLACEÆ *De Cand.*

Sepals 5, persistent. *Petals* 5, unequal and the lower one spurred at the base, or sometimes equal. *Stamens* 5. *Anthers* generally with a dilated appendage at their extremity; 2 of them (in the genera with irregular flowers) usually appendiculate at the base. *Ovary* 1-celled, with 3 parietal placentas, bearing several *seeds*. *Style* 1. *Capsule* 1-celled, 3-valved, bearing the seeds along the middle of each valve. *Embryo* straight, about as long as the copious fleshy *albumen*. — Herbs *or* shrubs, *with stipuled leaves, and powerful emetic and purgative roots;* as *Viola Ipecacuanha*, *Ionidium parviflorum* (which has been satisfactorily ascertained to be the famous "Cuychunchulli" or *Ionidium Marcucii* of Dr. Bancroft), &c.

Víola *Linn.* Violet.

Cal. of 5 sepals extended at the base. *Pet.* 5, unequal, the under one spurred at the base. *Anthers* connate, 2 of them spurred behind. — Name of Celtic origin; in modern Gaelic *fail* signifies a *smell*, and *fail-chuach* a *violet*.

* *Stem scarcely any, or creeping.*

† *Stigma flat above, peduncles of fruit erect.*

1. V. *palústris* L. (*Marsh V.*); creeping underground, glabrous, leaves cordate or reniform veiny beneath, sepals obtuse, spur very short, lateral petals scarcely hairy, anther-spurs short and rounded, capsule glabrous. *E. B.* t. 444.

Bogs and marshy grounds, less frequent in the south; abundant in

Scotland, and even at a very considerable elevation. ♃. 4—7.— *Flowers* very pale blue with purple streaks. The *petals* are slightly hairy on one side at the base, but the lateral ones have not a distinct line of hairs. *Anthers* with the cells nearly parallel, not slightly diverging below as in the two preceding species.

†† *Stigma uncinate deflexed convex above, peduncles of fruit prostrate.*

2. V. *hírta* L. (*hairy V.*); creeping scions none, leaves cordate and as well as the petioles and capsules rough with hairs, sepals obtuse, lateral petals usually with a hairy central line, spur hooked at the end, anther-spurs linear-oblong. *E. B.* t. 894.

Woods and pastures in England, principally in a chalky or limestone soil. Rare in Scotland, and only in Dumfriesshire and on the eastern side. ♃. 4, 5.— *Stems* usually several, short, decumbent at the base, but not at all sarmentose. *Flowers* pale, rather dingy blue, scentless. Nearly allied to *V. odorata,* and chiefly distinguished by the want of creeping *scions,* by the greater hairiness of the plant. the hairs on the petioles always spreading, and the spur of the corolla compressed and hooked, not channelled, and straight. *Bracteoles* usually inserted below the middle of the peduncle, sometimes above the middle. The *flowers* of this, and several of the other species, are often destitute of *petals.*

3. V. *odoráta* L. (*sweet V.*); scions creeping, leaves cordate and as well as the petioles and capsules pubescent, or nearly glabrous, sepals obtuse, lateral petals usually with a hairy line, spur straight, anther-spurs lanceolate obtuse decurved. *E. B.* t. 619.

Woods, banks, and pastures; frequent in England. Very rare in Scotland, and perhaps only naturalized; as woods near Slateford and Collington, Edinburgh; Partick, Glasgow; and near the Castle Rock, Stirling. Hedges between Killiney Hill and Bray, Ireland. ♃. 3—4.— *Stems* truly sarmentose as in the strawberry. *Leaves* and *flowers* from the crown of the root. *Flowers* deep purple, sometimes reddish-purple or lilac, often white, fragrant. Hairs on the petioles short and deflexed, rarely long and spreading as in *V. hirta.* *Bracteoles* usually inserted above the middle of the peduncle, sometimes about the middle or even below it. The white-flowered variety oftener than the purple one wants the hairs on the lateral petals, when it is the *V. imberbis* Leight., and sometimes, as well as the lilac variety, has the sepals ciliated.

** *Furnished with an evident stem, peduncles of fruit erect.*

4. V. *canína* L. (*Gerard's* or *Dog V.*); primary stem short and bearing leaves only, lateral ones or flowering branches numerous ascending simple, leaves broadly cordate more or less acute, stipules ciliato-dentate, sepals acuminate. *E. B.* t. 620. V. sylvatica *Fries.* V. flavicornis *Forster in E. B. S.* t. 2736.

Woods, banks, and dry pastures, frequent, also in clefts of rocks at a considerable elevation. ♃. 4.—8.—Variable in regard to size. In mountainous situations the blossoms are often numerous, and large in proportion to the size of the plant. *Flowers* scentless blue, purple, or sometimes almost white. *Bracteoles* subulate and entire in this and the two following species. The whole plant is usually glabrous, but sometimes the flowering stems have a minute deflexed pubescence. "*Crown of the root* prolonged into a short central erect barren persistent *stem*. *Flowering branches* (stems?) lateral, undivided, trailing, annual. *Leaves* thin, flexible." *H. Watson.*

5. V. *púmila* Vill. (*Dillenius' V.*); primary and lateral stems elongated flower-bearing, leaves ovate or oblong or lanceolate usually cordate at the base, stipules more or less toothed or serrate, sepals acuminate, "anther-spurs three times as long as broad." V. canina *Fries*, *Bab.*—*α.* leaves cordate at the base, stipules ciliate or toothed. V. flavicornis *Sm.*—*β.* leaves ovate lanceolate rounded at the base, stipules inciso-serrate. V. lactea *Sm. E. B.* t. 445. V. lancifolia *Thore.*

Heathy, dry, or sandy places, perhaps not uncommon. *β.* Tunbridge Wells, Buckland, Devonshire. ♃. 4.—8.—Mr. Babington says, that *V. pumila* of Villars has a "rhizomatous" root, and that the present one has not, but it accords perfectly with what we possess from De Gingins, and which he had compared with from Villars' specimens while describing the Violaceæ for De Candolle's Prodromus. Whatever appellation, however, be ultimately applied to it, it cannot receive that of *canina*, as proposed by Fries and his followers, since it is not the *dog-violet* of England; a name which Linnæus took from Gerard, and merely converted into Latin: in such a case we must look to the origin of the name, not to what Linnæus may have supposed to be so. Generally smaller than the last species, and quite glabrous or most minutely pubescent. *Flowers* paler, sometimes white. "*Branches* annual at their extremities, with persistent or suffruticose bases, ultimately becoming somewhat woody and cæspitose. *Leaves* thickish, rigid." *H. Watson.*

6. V. *stagnína* Kit. (*Haller's V.*); primary and lateral stems flower-bearing and elongated, leaves ovate lanceolate subcordate at the base, petioles winged towards the top, stipules inciso-serrated, sepals acuminated, anther-spurs 1½—2 times longer than broad, spur of corolla very short, "rhizome slender." V. stricta *Horn.: Bab. in Ann. N. H.* Jan. 1852, p. 13. V. lactea *Brit. Fl.* ed. 6.

Bogs and fens, rare. Bottisham Fen, Cambridgeshire, Lincolnshire, Sussex, Cornwall; also in Ireland. ♃. 5, 6.—This is unquestionably the only species we had in view as *V. lactea* in the last edition; it is almost the only one which we have received as such from British collectors; and it is, we conceive, that intended by *V. lactea* by Swiss botanists, and united to *V. montana* by Gingins. If we understand correctly what is meant by "rhizome slender," there ought

to be a subterranean creeping stem as in *V. palustris*, but our specimens scarcely show a greater difference in that respect between this and the last species, than may be caused by the soil: the length of the *anther-spurs* is dependent on that of the spur of the corolla. A small plant in the wild state, sometimes a foot high when cultivated, having usually several flowering simple branches from near the root; these seem scarcely so persistent as in the last species, from which it may not be really distinct. *Leaves* almost lanceolate and narrower, usually attenuated at the base, but sometimes cordate. *Stipules* usually much shorter than the *petiole*. *Stigma* very slightly curved, almost clavate and quite smooth, without any horizontal beak, the orifice obliique and very large. *Flowers* pale blue or almost white.

†† *Stigma large, capitate, style clavate.*

7. V. *trícolor L.* (*Pansy V.* or *Heart's Ease*); root annual or fusiform, stem angled branched, leaves oblong deeply crenate, stipules lyrate-pinnatifid, terminal lobe crenate, spur of the corolla about as long as the produced base of the calyx, "anther-cells diverging at the base." — *α.* petals longer than the calyx. *E. B.* t. 1287. V. Curtisii *Forst. in E. B. S.* t. 2693. — *β.* petals shorter than the calyx. V. arvensis *Murr. E. B. S.* t. 2712.

Banks and cultivated fields, frequent. *β.* Corn-fields. ☉, ♂, or ♃ (perhaps only when cultvated). *Fl.* the whole summer. — Extremely variable, especially in the size and colour of its *flowers*, yellow in *V. Curtisii* of Forster, which we certainly consider belongs to this and not to *V. lutea*. *Stigma*, in this and the following species, large, capitate, obliquely perforated.

8. V. *lútea* Huds. (*yellow Mountain V.*, or *yellow Pansy*); perennial diffuse and filiform below-ground, stem branched and very slender at the base, leaves oblong-ovate or ovate crenate, stipules subpalmato-pinnatifid, terminal lobe entire, spur of the corolla about as long as the produced base of the calyx, "anther-cells nearly paralliel."—*α.* petals all yellow or the two upper purple. *E. B.* t. 721.—*β.* petals all purple. V. amœna *Sym.*

Mountainous pastures. Frequent in Wales, the north of England and Scotland; *α* and *β* often growing together. ♃. 5—9. — Underground *stems* or *branches* resembling long thread-like roots; true stems also slender but particularly so at the base; both very different from what we have always seen in *V. tricolor*, and by which this species is in some cases only to be distinguished. The *flowers* are generally of a pale yellow or sulphur colour, much larger than is usual in wild states of *V. tricolor*.

Ord. X. DROSERACEÆ *De Cand.*

Sepals usually 5, persistent, equal. *Petals* as many as the sepals. *Stamens* free, equal in number with the petals or 2—4

times as many; *anthers* dehiscing longitudinally. *Ovary* 1. *Styles* or sessile *stigmas* several. *Capsule* 1-celled, with 3—5 placentas and 3—5 valves, loculicidal; *valves* bearing the seeds along their middle. *Seeds* never comose. — Herbs *of marshy ground, with the* leaves *all radical or* stem-leaves *alternate.*

1. DROSERA. Styles filiform. Leaves clothed with glandular hairs.
2. PARNASSIA. Stigmas sessile. Leaves glabrous.

SUB-ORD. I. DROSEREÆ. *Styles (or style) elongated. Stamens hypogynous, as many as the petals. Capsule* 1(—3)*-celled,* 3—5*-valved. Seed with a minute embryo at the base of a copious fleshy albumen. Leaves clothed with beautiful glandular hairs, and having a circinate vernation.*

1. DRÓSERA *Linn.* Sun-dew.

Styles 3—5, variously divided, usually bipartite and resembling 6—10 distinct styles. *Capsule* 1-celled, many-seeded. — Name derived from δροσος, *dew*, the glands exuding a pellucid fluid, which makes this plant appear as if covered with dew. In the Latin of the middle ages (for it was unnoticed by the ancients) it is called *Ros solis*, a mere translation of the common name. Nearly all the species stain the paper in which they are placed, of a purple colour.

1. D. *rotundifólia* L. (*round-leaved S.*); leaves radical obovato-orbicular spreading, petioles hairy, seeds chaffy. *E. B.* t. 867.

Bogs and moist heathy ground, frequent. ♃. 7, 8. — In all our species the *leaves* are covered with red pedunculated viscid glands, which retain insects; the *flowers* are racemed, small, secund, on a scape; and the *styles* (3—4) are bipartite. *Stigmas* entire, clavate. *Petals* almost always 6.

2. D. *longifólia* L. (*spathulate-leaved S.*); leaves radical oblong-spathulate obtuse or obovate on long glabrous erect petioles, seeds with a compact rough coat not chaffy. *E. B.* t. 868.

Bogs and moist heathy ground, not uncommon; more frequent in the south than in the north. Isle of Skye. South of Ireland. ♃. 7, 8. — Well distinguished from the following, by its rough, and not loose, coat adhering firmly to the rest of the *seed*, a character long ago observed and figured by Dreves and Hayne. *Petals*, *sepals*, and *stamens* often 6 and sometimes 8 in this and the next species. Limb of the *leaf* scarcely longer than 5—6 times its breadth, sometimes not twice longer, gradually tapering into the glabrous *petiole*. *Stigmas* bifid.

3. D. *A'nglica* Huds. (*great English S.*); leaves radical linear-spathulate obtuse on long glabrous erect petioles, seeds with a loose chaffy coat. *E. B.* t. 869.

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Bogs in several parts of Scotland. Near Warrington, Lancashire; Bedfordshire, Norfolk, Hampshire, Devon, and probably in several other counties. ♃. 7, 8. — This has much longer and narrower *leaves* than the last, and would better deserve the name of *longifolia*: the limb is usually at least 10—12 times longer than broad, and is so attenuated into the petiole that the commencement of the latter is chiefly distinguished by being glabrous. *Scape* much taller than the last.

SUB-ORD. II. PARNASSIEÆ. *Stigmas* 4, *sessile, in a line with the placentas. Stamens* 5, *perigynous. Capsule* 1-*celled*, 4-*valved. Seeds without albumen. Leaves glabrous.*

2. PARNÁSSIA *Linn.* Grass of Parnassus.

Stamens with as many intermediate nectaries fringed with globular-headed filaments. — Named from *Mount Parnassus*, to which place, indeed, the plant is by no means peculiar; it is called by Dioscorides αγρωστις εν τῳ Παρνασσῳ.

1. P. *palústris* L. (*common G.*); bristles of the nectary 9—13, leaves cordate cauline one amplexicaul. *E. B.* t. 82.

Bogs and wet places; frequent in the North. ♃. 8—10. — *Leaves* mostly radical, on long footstalks, cordate, entire, nerved; one on the stem (a *bractea*?) below the middle, sessile. *Stem* angular, from 1 inch to usually 8—10 inches high. *Flower* solitary, terminal, large, yellowish-white, handsome. *Petals* broadly obovate. *Nectaries*, each an obcordate scale, opposite the petals, fringed along the margin with white hairs which are terminated by a yellow pellucid globular gland.

ORD. XI. POLYGALACEÆ *Juss.*

Sepals 5, the 2 inner generally large and petaloid. *Petals* 3—5, more or less united with the filaments of the *stamens*, which form 2 parcels, each with 4 *anthers*, opening by pores at the apex. *Ovary* 1, usually 2-celled. *Style* and *stigma* 1, *Fruit* a capsule, or drupaceous, 2- or 1-celled; dehiscence loculicidal. *Seeds* solitary, pendulous, often with a caruncle at the base. — Shrubs *or* herbs. Leaves *without stipules*. Flowers *usually racemose*. — Several of this family are used medicinally. The leaves are bitter, the roots more or less milky. *Polygala Senega* is the snake-root of N. America. *Krameria* of Peru is powerfully astringent, and usually referred here.

1. POLÝGALA *Linn.* Milkwort.

Cal. with 2 sepals, wing-shaped, and coloured. *Pet.* combined by their claws with the filaments, the lower one keeled.

Caps. compressed. *Seeds* downy, crested at the *hilum.* — Name, πολυ, *much*, and γαλα, *milk*, from some fancied property in the plant.

1. P. *vulgáris* L. (*common M.*); perennial, keel crested, flowers in a terminal raceme, wings of the calyx ovate or oblong, their nerves branched the lateral ones anastomosing with a branch of the central nerve, capsule glabrous sessile obcordate, seed with the lobes of the arillodium unequal, stems herbaceous often branched at the base, branches simple procumbent or ascending, leaves on the branches linear or oblong.— *α.* leaves scattered, lower ones smaller oblong, wings of the calyx obovate mucronate. *E. B.* t. 76. P. oxyptera *Reich.*: *E. B. S.* t. 2827. P. depressa *Wendl.*— *β.* lower leaves chiefly in an irregular tuft obovate obtuse, wings of the calyx oblong. P. calcarea *Schultz.* P. amara *Don in E. B. S.* t. 2764.

Dry hilly pastures, frequent. ♃. 5—9. — *Stems* often very short, with crowded alternate or opposite, obovate or oblong, obtuse *leaves*, branched or simple: *branches* 4—8 inches long, being a mere continuation of the stem when this is simple, often springing from the root. *Cor.* beautifully crested, blue, purple, pink, or white. *Sepals* persistent, the two longer ones enclosing the fruit and usually twice as long, 3-nerved, the *veins* arising from the two lateral *nerves* either anastomosing with each other or with the upper vein of the central nerve. After carefully comparing specimens of the plants here referred to with Mr. Babington's observations in the *Ann. N. H.* April 1853, p. 270, we cannot come to the conclusion that they are specifically distinct, or can be at all times distinguished as permanant forms.

2. P. *austriaca* Crantz (*Austrian M.*); perennial, keel crested, flowers in a terminal raceme, "wings of the calyx oblong or obovate obtuse, their nerves simple or slightly branched free, capsule wedge-shaped below roundish broader than the wings, seed with the lobes of the arillodium nearly equal," stems herbaceous "leaves in a rosette obovate obtuse."—*α.* leaves of the rosette larger than those of the branching flower-shoot, flowers smaller, capsule rounded below.—*β.* leaves of the rosette larger than those of the nearly constantly simple flower-shoot, flowers larger, capsule wedge-shaped. P. uliginosa *Reich.* P. myrtifolia *Fries.*

β. Back of Cronkley Fell, Yorkshire; *Messrs. Backhouse.* 4, 5. The few specimens we have seen of the var. *β.* (the only one yet discovered in Britain) do not enable us to form a satisfactory character: we therefore avail ourselves of those given by Mr. Babington. in the paper referred to under last species. The var. *α.* is what we alluded to in our former edition as *P. amara* of most continental botanists.

Ord. XII. FRANKENIACEÆ *St. Hil.*

Sepals 4—5, combined into a furrowed persistent tube. *Petals* 4—5, clawed, crowned at the mouth. *Stamens* as many as the petals and alternating with them, with usually 1—2 accessary ones opposite to the petals. *Ovary* 1. *Style* filiform, 2—3-cleft. *Capsule* 2—4-valved, 1-celled. *Seeds* minute, attached to the margins of the valves. *Embryo* straight in the *albumen.*— Herbaceous *or* suffruticose, *much branched.* Leaves *opposite, without stipules, but with a membranous sheathing base.*

1. Frankénia *Linn.* Sea-Heath.

Stig. 3. — Named from *John Franken*, a Swedish botanist and professor of medicine at Upsal, who died in 1661.

1. F. *læ'vis* L. (*smooth S.*); leaves linear revolute at the margin glabrous ciliated at the base. *E. B.* t. 205.

Muddy salt marshes about Yarmouth and the other eastern coasts of England. Isle of Sheppey, Kent. ♃. 7, 8.—A humble procumbent *plant*, with wiry *stems* and numerous fascicled *leaves*, which are really oblong, and only appear linear by the edges being revolute. *Flowers* pale rose-coloured, terminal or from the axils of the branches.

2. F. **pulverulénta* L. (*powdery S.*); leaves obovate retuse glabrous above, downy and pulverulent beneath, petiole ciliated. *E. B.* t. 2222.

Found in the time of Dellenius and Hudson on the sea-coast of Sussex. ☉. 7. — *Stems* prostrate, repeatedly dichotomous. *Flowers* smaller than in the preceding.

Ord. XIII. ELATINACEÆ *Camb.*

Calyx 3—5-partite or -cleft. *Petals* 3—5, sessile. *Stamens* equal to, or double the number of, petals. *Ovary* with from 3—5 cells and as many *styles* and capitate *stigmas*. *Capsule* 3—5-celled, 3—5-valved; *valves* alternate with the dissepiments which adhere to a central axis. *Seeds* numerous, without *albumen; radicle* turned to the *hilum.* — *Small* annuals, *inhabiting marshy places, with rooting stems and opposite or verticillate leaves.*

1. Elatíne *Linn.* Water-wort.

Cal. inferior, 3—4-partite or -cleft, persistent. *Pet.* 3—4. *Styles* 3 or 4, very short. *Caps.* 3—4-valved, 3—4-celled. *Seeds* cylindrical, furrowed and transversely striate.— Named from ἐλατίνη, some plant found growing among corn and very dissimilar to our present one.

1. E. *hexándra* DC. (*hexandrous W.*); leaves opposite spathulate, flowers alternate pedicellate erect hexandrous tripetalous, calyx-segments spreading, capsule turbinate concave at the summit 3-celled, seeds 8—12 in each cell nearly straight ascending. E. tripetala *Sm. E. Fl.* E. Hydropiper *E. B.* t. 955. (not L.)

Margins of ponds and ditches, rare. Bomere pool, near Condover, Shropshire; Hedge-Court Pond, near East Grinstead, Surrey; Binfield, Berks; Crawley and Maresfield, Sussex; Coleshill pool, Warwickshire; also in Cornwall, Leicestershire, Cheshire, and Anglesea. Loch Ruisky, near Callender, Perthshire; Loch of Drum, Kincardineshire; Loch Fadd, Isle of Bute. ⊙. 7—9. — A minute, procumbent, much-branching plant, with axillary solitary *flowers*. *Petals* rose-coloured. *Seeds* mostly beautifully ribbed and transversely striate.

2. E. *Hydropíper* L. (*small octandrous W.*); leaves opposite spathulate, flowers alternate sessile erect octandrous tetrapetalous, calyx shorter than the petals divided to the base, segments ligulate, capsule roundish depressed 4-celled, seeds about 4 in each cell pendulous uncinate. *Linn. Flor. Suec.; Borr.* in *E. B. S.* t. 2670 (excl. *a.*). E. nodosa *Arn.*

Rare; Farnham, Surrey. East end of Llyn Coron, Anglesea, growing with *E. hexandra*. Newry, and at the Lough Neagh outlet of the Lagan Canal, Ireland. ⊙. 8.—Asserted by Seubert to be the *Hydropiper* of Buxbaum, and consequently of Linnæus, but certainly most distinct from *E. Hydropiper* DC., the *E. major* of Braun, which is that figured in Vaillant's Fl. Par. t. 2. f. 2., and Lam. ill. t. 320. f. 2. This last is much stouter, has the seeds almost straight and as numerous as in *E. hexandra*, capsule depressed, twice as large as in our two species and the calyx cleft only to about the middle of the segments which are short very broadly ovate and erect; the flowers are evidently pedicellate: it is allied to, and united, we think erroneously, by Seubert, with *E. hexandra*. We have never seen specimens except from the neighbourhood of Paris.

Ord. XIV. CARYOPHYLLACEÆ *Juss.*

Sepals 5 or 4, persistent, distinct or united. *Petals* as many, rarely wanting. *Stamens* as many as or double the number of the petals, inserted upon a fleshy elevated disk, supporting the ovary, or a ring. *Anthers* opening longitudinally. *Ovary* 1. *Styles* 2—5. *Capsule* 1-celled (sometimes only so at the summit, and 2—5-celled below), 2—5 valved or opening at the summit with teeth, placenta central and free in the 1-celled capsules, in the rest axile. *Seeds* generally numerous. *Embryo* generally curved round a mealy *albumen*. — Herbs, *more or less tumid at the joints, with opposite entire leaves, without stipules* (*by which alone our Suborder* Alsineæ *differs from* Paronychiaceæ).

Sub-Ord. I. SILENEÆ. *Calyx monophyllous, toothed. Capsule stalked. Stamens* 10.

1. DIANTHUS. Calyx with bracts (usually 4) at the base. Seeds peltate. Styles 2.
2. SAPONARIA. Calyx naked at the base, terete. Seeds globose or reniform. Styles 2.
2ª. VACCARIA. Calyx naked at the base, 5-angled and in fruit 5-winged. Styles 2.
2ᵇ. CUCUBALUS. Capsule fleshy, scarcely opening. Styles 3—4.
3. SILENE. Capsule dry, opening at the top with 6 teeth. Styles 3—4.
4. LYCHNIS. Styles 5. Petals with an appendage at the base of the limb.
AGROSTEMMA. Styles 6. Petals without an appendage.

Sub-Ord. II. ALSINEÆ. *Sepals distinct. Capsule sessile, 1-celled. Petals often perigynous.*

* *Capsule opening by as many entire valves as styles.*

† *Styles as many as the sepals, and alternate with the valves of capsule, opposite the sepals.*

6. SAGINA. Petals 0, or minute, or entire. Stamens usually 4 or 10. Styles 4—5.

†† *Styles and capsule valves fewer than sepals; or if as many, styles opposite to, and caps.-valves alternate with, the sepals.*

7. BUFFONIA. Sepals 4. Petals 4, entire. Stamens 4. Styles 2.
8. CHERLERIA. Sepals 5. Petals 0 (or very minute and perigynous). Stamens 10. Styles 3. Seeds few, minute. Flowers polygamous.
9. HONCKENYA. Sepals 5. Petals entire, conspicuous. Stamens 10. Styles 3—5. Seeds few, large. Flowers polygamous.
10. ARENARIA. § 1. Sepals usually 5 Petals entire, conspicuous. Stamens usually 10. Styles usually 3. Seeds many, minute. Flowers all perfect.

** *Capsule opening by as many valves as styles, each bifid; or by twice as many valves or teeth as styles.*

† *Capsule opening to the middle by valves.*

10. ARENARIA. § 2. Sepals usually 5. Petals entire. Stamens usually 10. Styles about 3, opposite to the sepals when as many.
11. MALACHIUM. Sepals 5. Petals bifid. Stamens 10. Styles alternate with the sepals. Caps.-valves 5, opposite to the sepals, bifid at the apex.
12. STELLARIA. Sepals 5. Petals bifid. Stamens 10. Styles usually 3, opposite to the sepals when as many. Caps.-valves twice as many as styles.

†† *Capsule opening at the extremity by twice as many teeth as styles.*

13. HOLOSTEUM. Sepals 5. Petals toothed. Stamens and styles usually 3.
14. MŒNCHIA. Sepals usually 4. Petals entire. Stamens and styles as many as the sepals.
15. CERASTIUM. Sepals 4—5. Petals bifid. Stamens 4—10. Styles as many as the sepals.

SUB-ORD. I. SILENEÆ. *Sepals united into a monophyllous calyx. Petals and Stamens hypogynous, inserted on the summit of a more or less conspicuous stalk to the Ovary.*

1. DIÁNTHUS *Linn.* Pink.

Cal. monophyllous, tubular, 5-toothed, with about 4 imbricated opposite *scales* or *bracteoles* at the base. *Pet.* 5, clawed. *Stam.* 10. *Styles* 2. *Caps.* cylindrical, 1-celled. *Seeds* peltate. — Name derived from Ζευς, Διος, *Jupiter*, and ανθος, a *flower*: dedicated, as it were, to Deity itself, to express the high value that was set upon this charming genus of plants.

* *Flowers clustered.*

1. D. *Arméria* L. (*Deptford P.*); flowers clustered fascicled, scales of the calyx lanceolate subulate herbaceous downy as long as the tube. *E. B.* t. 317.

Pastures and hedges; not uncommon in England. In Angusshire, but probably introduced. ☉. 7, 8.— *Stem* 1—1½ ft. high, branched upwards, downy. *Leaves* linear, opposite and connate, slightly pubescent, upper ones acute. *Limb* of the *petals* rose-coloured with white (not red, as mentioned in *E. B.*) dots, crenate at the margin. *Flowers* scentless.

2. D. *prólifer* L. (*proliferous P.*); flowers clustered capitate, scales of the calyx ovate membranous about the length of the tube, outer ones acute inner ones blunt, leaves rough at the edge. *E. B.* t. 956.

Gravelly pastures in England, rare; Dover; Selsey island, Sussex; near Hampton-court; near Norwich; Hanby Castle, Worcestershire; Ryde, Isle of Wight; Hayling and Portsea islands, Hants; Jersey. ☉. 6—10. — Readily distinguished by its small, deep-coloured *flowers*, of which only one in a head expands at a time, and by the large, dry, brown, and membranous *scales* which envelope the *calyces* of several flowers. *Limb* of the *petals* obcordate, notched.

** *Flowers solitary, one or more on the stem.*

3. D. **Caryophýllus* L. (*Clove P., Carnation*, or *Clove Gilly-flower*); stem branched, flowers mostly solitary, scales of the calyx obovate submucronate much shorter than the tube, petals broad dentato-crenate glabrous, leaves linear subulate grooved glaucous smooth on the margin. *E. B.* t. 214.

On ruined walls in Kent, as on the castles of Deal, Sandown, Rochester, &c. ♃. 7.—Few persons, seeing this plant as it grows on old walls, would suppose it was the origin of one of the "fairest flowers o' the season,"

"The curious choice Clove *July-flower*,"

or *Carnation* of our gardens, with its endless diversity of colour and form; yet such it is always considered to be.

Mr. Leighton (*Shropsh. Fl.* p. 188.) gives the *D. plumarius* or common Pheasant's-eye Pink, as an inhabitant of old walls at Ludlow and Lufford, and Haughmond Abbey; and perhaps several of the stations usually assigned to *D. Caryophyllus* belong to it: it differs chiefly by the leaves rough on the margin, and the petals bearded and more deeply cut (digitato-multifid). It is the *D. plumarius* DC., but not of Linnæus according to Sir J. E. Smith, who does not distinguish it from *D. Caryophyllus*: the hairy variety of *D. Caryophyllus* found in Kent by Doody and the Rev. G. E. Smith belongs to it, but there are numerous hybrids or varieties between them. Neither has any pretensions to be accounted native; and we only admit the type of *D. Caryophyllus* because it has been (in name at least) considered a doubtful native for more than 150 years.

4. D. *deltoídes* L. (*Maiden P.*); flowers solitary, scales of the calyx ovate-acuminate about half the length of the tube, leaves somewhat rough and downy lower ones obtuse, petals crenate glabrous. — *α.* scales of the calyx about 2. *E. B.* t. 61. — *β.* scales of the calyx mostly 4, petals nearly white. D. glaucus *L.*

Borders of fields, banks and hedges, on a gravelly or sandy soil, in England and Scotland, extending as far north as Ross-shire. About Edinburgh, &c., where, in the King's Park, grows the *var. β.* ♃. 6—9. — A small plant much branched even from its very base. *Petals* very beautiful, usually rose-coloured, spotted with white, with a white eye enclosed in a deep purple ring. *Stem* pubescent, scabrous.

5. D. *cæ'sius* Sm. (*Cheddar P.*); stems mostly single-flowered, scales of the calyx roundish slightly pointed about four times shorter than the tube, leaves scabrous at the margin, petals unequally jagged bearded. *E. B.* t. 62.

On limestone rocks at Cheddar, Somersetshire. ♃. 6, 7.—This exceedingly rare plant has very glaucous *foliage*, and comparatively large fragrant *flowers*, of a delicate rose-colour.

2. Saponária *Linn.* Soapwort.

Cal. monophyllous, cylindrical, 5-toothed, without *bracteas* at the base. *Pet.* 5, clawed. *Stam.* 10, alternate ones opposite the petals but not adhering to their claws. *Styles* 2. *Caps.* oblong 1-celled, or 2-celled at the base, 4-toothed. *Seeds* globose or reniform.—Named from *sapo*, *soap*; the plant yielding a mucilaginous juice, which has been employed in place of that useful article.

1. S. * *officinális* L. (*common S.*); leaves ovato-lanceolate, calyx cylindrical glabrous, capsule 2-celled at the base. *E. B.* t. 1060.

Road-sides, margins of woods, and hedge-banks, especially near cottages. ♃. 7, 8. — *Stem* 1—1½ ft. high, rather stout, cylindrical.

Leaves ribbed, opposite and connate. *Panicle* of numerous large rose-coloured *flowers*. Limb of the *corolla* obcordate.

(*Vaccaria vulgaris*, Host, has been found in corn-fields, but doubtless introduced; and *Cucubalus baccifer* L., given by Ray as a native of Anglesea, and therefore published in *E. B.* t. 1577, but since discarded, has been found in the Isle of Dogs, by Mr. Luxford and others; but there is no reason for considering it indigenous.)

3. Siléne *Linn.* Catchfly.

Cal. monophyllous, tubular, often ventricose, 5-toothed. *Pet.* 5, clawed, mostly crowned at the mouth, and the *limb* generally notched or bifid. *Stam.* 10, alternate ones opposite to the petals and adhering to the claws. *Styles* 3. *Caps.* 3-celled to the middle or only at the base (rarely 1-celled), 6-toothed, many-seeded.—Name supposed to arise from σιαλον, *sàliva*, in allusion to the viscid moisture on the stalks of many species; whence, too, the English name *Catchfly*.

** Capsule 3-celled at the base or to the middle.*

1. Stems tufted, short. Peduncles single-flowered.

1. S. *acaúlis* L. (*Moss Campion*); cæspitose, leaves linear ciliated at the base, peduncles solitary single-flowered, petals crowned slightly notched. *E. B.* t. 1081.

Rocky places on Snowdon. On the Helvellyn side of Grisedale Tarn, Cumberland. Abundant on all the Scottish mountains. ♃. 6—8. — *Stems* short 2—3 inches high, much branched and tufted. *Leaves* patent. *Flowers* a beautiful purple, and apparently dicœcious. — One of the greatest ornaments of our alps, not unfrequently found with white *flowers*.

2. Stems elongated. Flowers solitary or panicled. Calyx inflated, bladdery.

2. S. *infláta* Sm. (*Bladder Campion*); flowers numerous panicled, petals deeply cloven with narrow segments scarcely crowned, calyx inflated reticulated, stem erect, leaves ovato-lanceolate.—*α.* stem and leaves glabrous. Cucubalus Behen *E. B.* t. 164.—*β.* stem and leaves downy.

Pastures and road-sides common —*β.* near Cromer, Norfolk. Banks of the Clyde. ♃. 6—8. — Whole plant glaucous or downy, variable in the size and shape of its *leaves*, and in the more or less numerous *flowers*. *Petals* pure white.

3. S. *marítima* With. (*Sea Campion* or *C.*); panicles few-flowered, petals with a shallow cleft and broad segments crowned, calyx inflated reticulated, stems spreading, leaves ovato-lanceolate or spathulate. *E. B.* t. 957.

Frequent upon the sea-shore in sandy and stony places, as well as by alpine rills. ♃. 6—8. — This, although it has smaller *stems* and *leaves* than the last, has larger *flowers*; yet we will not assert we have done right in again raising it to the rank of a species. In this and the preceding, the *styles* are variable in number.

3. *Stems elongated. Flowers in racemes, and whorled.*

4. S. *Otites* Sm. (*Spanish C.*); stems erect nearly simple with few leaves, flowers in whorls subdiœcious, petals linear entire not crowned, leaves spathulate. Cucubalus, *E. B.* t. 85.

Sandy fields, chiefly in Norfolk, Suffolk, and Cambridgeshire. ♃. 6—8. — Remarkable for its small unassuming, diœcious *flowers*, with their linear entire yellowish *petals*.

4. *Stems elongated, branched. Flowers in leafy racemes, alternate.*

5. S. *A'nglica* L. (*English C.*); hairy and viscid, petals (small) crowned slightly bifid or obovate entire, calyces with setaceous teeth ovate in fruit.—*α*. flowers white or tinged with red, petals usually bifid. *E. B.* t. 1178.—*β*. flowers white with a red spot on each obovate usually entire petal. S. quinquevulnera *L.*: *E. B.* t. 86.

Sandy and gravelly fields. *α*. in Surrey, Cambridgeshire, Hertfordshire, Devonshire, Norfolk, Lancashire, North Wales, Essex, Cornwall, and Isle of Wight. In most of the counties on the east coast of Scotland, and in Ayrshire, but certainly introduced. *β*. near Wrotham, Kent, and Duppa's Hill, by Croydon, Surrey. ☉. 6—11. — More or less viscid. *Leaves* lanceolate, the lower ones spathulate. *Flowers* solitary from the axils of the upper leaves. *Calyx* at first cylindrical, scarcely shorter than the *petals*, erect; at length the *lower* ones, when in fruit, have their pedicels often singularly reflected. Our *var.* *β* is a common annual in gardens; it derives its Latin specific name from the 5 deep red spots sometimes observable on its *petals*, resembling marks of blood, but which are often more or less faint.

5. *Stems panicled, leafy. Calyx not bladdery.*

6. S. *nútans* L. (*Nottingham C.*); pubescent, flowers panicled secund cernuous, branches opposite, calyx cylindrical ventricose the teeth acute, petals deeply cloven crowned their segments linear, carpophore as long as the capsule, leaves (of the stem) lanceolate. *E. B.* t. 465. S. paradoxa *Sm. Fl. Br.* (not *L.*)

Limestone rocks, and chalky cliffs in England. Dover Cliffs; about Nottingham; Ormeshead, Caernarvonshire; Isle of Wight, and Brown down, near Gosport, Hampshire; Knaresborough, Yorkshire; Dove Dale, Derbyshire. N. Queensferry; St. Cyrus, Kincardineshire; and near Arbroath, Scotland. ♃. 5—7 — *Stem* 1—1½ ft. high. *Root-leaves* spathulate, acute. *Petals* rather large, white expanding in the evening. *Teeth* of the *capsule* reflexed.

7. S. * *Itálica* DC. (*Italian C.*); pubescent, flowers panicled nearly erect, branches opposite, calyx long clavate the teeth blunt, petals deeply bifid not crowned the segments broad, carpophore half as long as the capsule, radical leaves spathulate on long stalks, cauline one sessile linear-lanceolate. S. patens *W. Peete* in *E. B. S.* t. 2748.

Dartford, Kent; *Mr. A. Peete.* 4. 6, 7.—This may be at once known from *S. nutans* by the much longer and more clavate calyx, the absence of a crown to its petals, and their broader segments. The *petals* are white. The whole plant is more or less downy, the *panicles* slightly viscid. Teeth of the *capsule* reflexed. It has, we fear, escaped from gardens.

8. S. *cónica* L. (*striated Corn C.*); panicle forked, petals bifid crowned, leaves linear downy, calyx in fruit conical with numerous furrows, the teeth long subulate. *E. B.* t. 922.

At New Romney and Sandown Castle, Kent. Near Bury and Thetford, Suffolk. Dirleton, Haddingtonshire. ⊙. 5—7. — *Petals* purple, small. *Calyx* of the flower almost tubular and imbricated at the base, of the fruit so broad and swollen at its base as to be nearly conical; it is moreover finely striate.

6. *Stems elongated. Flowers corymbose. Calyx clavate.*

9. S. * *Arméria* L. (*common* or *Lobel's C.*); panicles forked corymbose with crowned flowers, petals notched and crowned with awl-shaped scales, calyx clavate and as well as the leaves glabrous, leaves ovato-lanceolate, stem viscid. *E. B.* t. 1398.

Banks of the Dee, half a mile from Chester; now extinct. Yalding, Kent. ⊙. 7, 8. — Extremely common in gardens.

** *Capsule* 1-*celled from the very base.*

10. S. *noctiflóra* L. (*Night-flowering C.*); panicle forked or flowers terminal, petals bifid crowned, calyx with long subulate teeth oblong in fruit with 10 connected hairy ribs, leaves lanceolate lower ones spathulate, capsule ovate. *E. B.* t. 291.

Corn-fields in a sandy or gravelly soil, in several counties of England. Coast of Forfarshire; Dirleton, Haddingtonshire; N. Queensferry; Scotland. ⊙. 7, 8.—*Stem* 1 ft. or more high. *Leaves* much like the last, pubescent. Upper part of the *stem* many times dichotomous, each branchlet terminated with a single flower, and a solitary flower in the axil of the fork. *Flowers* rather large, sweet-scented, pale-reddish, almost white. *Peduncles* viscid.

(*S. alpestris*, which has also the capsule perfectly 1-celled, was said by the late Mr. Geo. Don to have been discovered by him on a rock on a mountain to the east of Clova in Angusshire; and specimens from him are preserved in Mr. Borrer's and Dr. Walker Arnott's herbaria; but they appear certainly to have been obtained from a garden. If discovered, it may be recognised by the calyx-teeth ovate blunt, limb of the petals broad and 4-cleft, and the seeds ciliated.)

4. LÝCHNIS *Linn.* Campion Lychnis.

Cal. monophyllous, tubular, 5-toothed. *Pet.* 5, clawed, crowned at the mouth, mostly divided at the border. *Stam.* 10, alternate ones opposite the petals and adhering to their claws. *Styles* usually 5. *Capsule* opening by 5 or 10 teeth.—Named from λυχνος, a *lamp;* the thick cottony substance on the leaves of some species, or some similar plant, having been employed as wicks to lamps.

* *Ovary* 1-*celled. Capsule* 5-*toothed.* Eulychnis.

1. L. *Flos-Cuculi* L. (*Meadow L.* or *Ragged Robin*); flowers loosely panicled, petals 4-cleft. *E. B.* t. 573.

Moist meadows and pastures, frequent. ♃. 5, 6.—*Stem* 1—2 ft. high, hairy below, reddish-green, clammy above. *Leaves* lanceolate. *Calyx* and *flower-stalks* reddish-purple. *Petals* rose-coloured. In all this section the appendage at the base of the limb of the petals is membranous and soft.

** *Ovary* 5-*celled at the base. Capsule* 5-*toothed.* Viscaria.

2. L. *Viscária* L. (*red German Catchfly*); petals slightly notched at the extremity, stem clammy at the joints. *E. B.* t. 788.

Dry alpine rocks; on Craig Breiddin, Montgomeryshire; about Edinburgh and Newburg; near Airly Castle; Glen Farg, and Den of Balthayock, Perthshire. ♃. 8.—*Stems* 1 ft. high, glabrous. *Leaves* lanceolate, acuminate. *Flowers* in a compact *panicle*, large, rose-coloured. *Capsule* distinctly stalked.

3. L. **alpína* L. (*red alpine Catchfly*); glabrous, petals bifid, flowers corymbose-capitate. *E. B.* t. 2254.

On the summit of Little Kilrannoch, between Glen Prosen and Glen Callater, at an elevation of about 3200 ft. Hobcaster Fell, Cumberland. ♃. 6, 7.—*Stem* 5—6 inches high, by no means viscid. *Leaves* lanceolate. *Flowers* rather small, rose-coloured. As to the Clova station, we have strong reasons for thinking that the plant was sown there above 60 years ago. The Cumberland habitat is perhaps as doubtful.

*** *Ovary* 1-*celled. Capsule* 10-*toothed.* Melandrium.

4. L. *vespertína* Sibth. (*white C.*); flowers subdiœcious, calyx of the pistilliferous flowers with linear-lanceolate elongated teeth, capsule conical the teeth erect. L. dioica β. *L.*: *E. B.* t. 1580.

Under hedges and in grass-fields, common. ♂ or ♃. (?) 6—9. —*Petals* usually pure white and fragrant in the evening, sometimes, but rarely, reddish. In this and the following the *stem* is 1—2 ft. high,

panicled above, pubescent, viscid in a slight degree about the joints. *Leaves* ovate, or ovate-lanceolate. *Calyx* in the anther-bearing flowers sub-cylindrical, in the fruit-bearing ones ovate.

5. L. *diúrna* Sibth. (*red C.*); flowers subdiœcious, calyx of the pistilliferous flowers with triangular teeth, capsule nearly globose, the teeth recurved. L. dioica *a. L.: E. B.* t. 1579.

Damp hedge-banks or in woods, not uncommon. ♃. 6, 7.— *Petals* red, very rarely nearly white. In both this and the last the *flowers* have occasionally both stamens and pistils, but we have seen none such in which one or other were not abortive.

5. Agrostémma *Linn.* Cockle.

Cal. monophyllous, tubular, coriaceous, with 5 teeth. *Pet.* 5, clawed, their border undivided and without a crown. *Stam.* 10, alternate ones opposite to the petals and adhering to their claws. *Styles* 5. *Caps.* opening with 5 teeth, 1-celled.— Name: *αγρου στεμμα*, *Crown of the field*, from its being a great ornament to corn-fields.

1. A. *Githágo* L. (*Corn C.*). *E. B.* t. 741. Lychnis *Lam.* Githago segetum *Desf.*

Corn-fields, now too frequent, but probably an introduced plant. ♃. 6—8.— Stem 1—2 ft. high, branched erect. *Leaves* linear-lanceolate. *Calyx* ribbed, its segments much longer than the corolla. *Flowers* large, purple. As now limited this is the only species; all the others of Linnæus having been referred to *Lychnis*, and among them the *Flos Jovis*, to which the name *Agrostemma* principally referred.

Sub-Ord. II. ALSINEÆ. *Sepals distinct or nearly so. Petals and stamens inserted on an hypogynous or perigynous ring. Capsule sessile, 1-celled.*

6. Sagína *Linn.* Pearl-wort.

Cal. of 4—5 sepals. *Pet.* 4—5, entire or emarginate, sometimes wanting. *Stam.* 4—10. *Styles* as many as the sepals, and alternate with them. *Valves* of *Capsule* entire, as many as the sepals and opposite to them. *Seeds* small, numerous.—The name (signifying *meat which fattens*) is little applicable to any of the minute plants belonging to this genus.

* *Sepals, stamens and styles* 4, *rarely* 5. Eusagina.

1. S. *apétala* L. (*annual small-flowered P.*); annual, stems slightly hairy erect or ascending, leaves aristate fringed, sepals 4, much longer than the calyx, very spreading in fruit obtuse, or the two outer ones slightly mucronate. *E. B.* t. 881.

Dry gravelly places, and walls, &c., frequent; sometimes upon the sea-shore. Rare in Scotland. ☉. 5—9.— More slender than

the last, smaller and annual. *Leaves* narrower, more bristle-pointed, more glaucous and slightly hairy at the margins, sometimes glabrous. *Petals* always present, obcordate, or wedge-shaped and truncated.

2. S. *ciliáta* Fries (*ciliated P.*); annual, stem erect or ascending, leaves aristate glabrous or fringed, "petals none," sepals of the fruit erect or close-pressed to the capsule, 2 outer ones mucronate or aristate.

Dry gravelly places and walls, probably frequent in England. Near Edinburgh; under the stone table on the summit of Kinnoul Hill, and by the road-side to Dundee, near Perth. ⊙. 5—9.—We introduce this species with much hesitation as distinct from *S. apetala*. the only certain difference consisting in the direction of the sepals when in fruit. The plant is stated to be nearly glabrous; but our Scotch specimens (and we have seen only the present one from Scotland) are quite as hairy as the *S. apetala;* the outer sepals are usually more decidedly mucronate, or even aristate; but as the leaves are also rather more aristate, such a structure of sepals is a natural consequence. There are said to be no *petals* in this and the next; still as the normal state of the genus is to possess petals, forms of all the legitimate species must occasionally occur with them.

3. S. *marítima* Don (*Sea P.*); annual glabrous, stems erect or procumbent only at the base, leaves fleshy obtuse or with a short apiculus, "petals none," sepals 4 roundish-ovate about as long as the capsule erect in fruit. *E. B.* t. 2195.

Sea-coast not unfrequent, chiefly in places occasionally overflowed. ⊙. 5—9.— Quite glabrous. *Calyx* blunt, longer, or sometimes shorter than the *capsule*, sepals erect and close pressed to the fruit. *Leaves* "rounded at the back;" *Mr. W. Wilson.* This species appears distinct and well-marked, it has a reddish or purplish tinge, especially on the *stems* and *leaves;* but we are sometimes inclined to doubt if the difference between it and the two preceding may not arise from the place of growth, and if so, they might be judiciously combined.

4. S. *procúmbens* L. (*procumbent P.*); perennial usually glabrous, stems procumbent, central one very short, leaves mucronate, sepals 4 or rarely 5, much longer than the petals spreading in fruit, styles reflexed during flowering. *E. B.* t. 880.

Waste places, and dry pastures, everywhere, and at all elevations. 2. 5—9.— The central *stem* is very short, erect, and without flowers, lateral ones spreading, 2—4 inches long, and often sending out roots from different parts at the insertion of the leaves, and these throwing up new plants. In some situations it grows amongst *S. subulata*, and in others amongst *S. saxatilis*, from both of which it is with difficulty distinguished. *Leaves* linear-subulate, connate, with membranous margins at the base, tipped with a short pellucid point or mucro. *Peduncles* solitary, axillary and terminal, about an inch long, recurved at the apex after flowering, but erect when in fruit. "A pubescent *var.* occurs in Sussex." *Mr. Borrer.*

** *Stamens* 10. *Sepals, petals and styles* 5. Spergella.

5. S. *saxátilis* Wimm. (*alpine P.*); perennial glabrous or nearly so, stems prostrate slightly rooting, central one short and flowerless, leaves subulate mucronate, peduncles solitary very long, petals shorter than the calyx, sepals in fruit erect and close-pressed to the capsule, capsule longer than the calyx often twice as long. Spergula saginoides *L.: E. B.* t. 2105.

Highland mountains, frequent. ♃. 6—8.—*Stems* many from the root, procumbent below, 2 or 3 inches in length. *Leaves* numerous and rather long at the base, shorter and in remote pairs upon the stem. *Flower* drooping before and after expansion; *capsule* erect, the valves much more narrowed upwards than in *S. procumbens*. *Styles* erect during flowering. Sometimes confounded with *Arenaria rubella*, but that has the sepals conspicuously 3-nerved.

6. S. *subuláta* Wimm. (*Awl-shaped P.*); perennial, cæspitose, stem procumbent not rooting, leaves subulate aristate, peduncles solitary very long, petals and capsule somewhat longer than the calyx.—*α.* leaves usually ciliated, peduncles and calyx glandular-hairy. Spergula *Sw.: E. B.* t. 1082. Sagina procumbens *β. Linn.*—*β.* almost quite glabrous. S. nivalis *Fries*.

Dry, gravelly, and stony pastures, not uncommon. *β.* Isle of Skye, and Clova Mountains. ♃. 6—8.—This comes very near the last species, and it is not easy at all times to discriminate between them: the common form is more glandular-hairy, while the alpine state is as glabrous but with all the stems elongated. Mr. W. Wilson, however, cannot distinguish the Anglesea *S. subulata* from the Ben Lawers *S. saxatilis*. Both have very much the habit of *S. procumbens*.

7. S. *nodósa* L. (*knotted P.*); perennial, leaves subulate glabrous connate, the lower ones sheathing, upper ones bearing tufts of young leaves in the axils, petals much longer than the calyx. Spergula *L.: E. B.* t. 694.

Wet, sandy, and marshy places, frequent. ♃. 7, 8.—Central stem short, without flowers; lateral ones 3—4 inches high, branched, and decumbent at the base, where the leaves are $\frac{3}{4}$ of an inch long, but they gradually become smaller upwards. *Flowers* large, white, 2—3 on the terminal branches, peduncled. Whole plant glabrous or sometimes glandular-hairy. *Cal.* nerveless.

7. Buffónia *Sauv.: Linn.* Buffonia.

Cal. of 4 sepals. *Cor.* of 4 entire petals. *Stam.* 4. *Styles* 2. *Caps.* flattened, 1-celled, 2-valved, 2-seeded.—Name given by Sauvages in honour of the celebrated *Buffon*.

1. B. * *ánnua* DC. (*annual B.*); stem loosely panicled from the base, branches spreading short firm, striæ on the calyx

straight parallel, capsules scarcely so long as the cal., leaves subulate spreading at the base. B. tenuifolia *Sm.*: *E. B.* t. 1313.

Said to have been found in Plukenet's and Dillenius' time, about Boston in Lincolnshire, and on Hounslow Heath. ☉. 6. — Linnæus' *B. tenuifolia* is made up of several species; hence it is better to adopt the name given by De Candolle.

8. Cherléria *Linn.* Cyphel.

Flowers polygamous. *Cal.* of 5 sepals united at the base and urceolate. *Pet.* none (or "5 perigynous, very minute, entire and obliquely notched"). *Stam.* 10, alternating with glands; *anthers* abortive in the fertile flowers. *Styles* 3. *Caps.* 1-celled, opening with 3 valves, abortive when the anthers are perfect. *Seeds* 5—6, minute.—Named in honour of *John Henry Cherler*, a friend and coadjutor of John Bauhin.

1. C. *sedoides* L. (*mossy C.*). *E. B.* t. 1212.

Summits of the Highland mountains, especially those of the Breadalbane range. ♃. 6—8.— *Roots* exceedingly long, running deep into the earth, bearing, upwards, innumerable short forked *stems*, and forming a dense mass which scarcely rises above the surface of the soil. *Leaves* crowded, linear-subulate, channelled above, slightly ciliated and glandular at the edge. *Flowers* solitary, imbedded among the dense mass of leaves, yellow-green. *Cal.* membranous at the edge. In the fertile flowers the *stamens* are three times shorter than the calyx; when perfect they are as long as the sepals. We ourselves have never seen any *petals*.

9. Honckénya *Ehrh.* Sea-Purslane.

Flowers polygamous. *Sepals* 5. *Petals* 5, conspicuous, undivided. *Stamens* 10, alternating with glands: *anthers* abortive in the fertile flowers: *ovary* with 3—5 *styles*, abortive when the anthers are perfect. *Caps.* opening with 3—4 entire valves, or with 5 alternate with the sepals. *Seeds* 8—10, large.—Named after *Gerh. Aug. Honckeny*, a German botanist.

1. H. *peploides* Ehrh. (*ovate-leaved S.*). Arenaria *L.*: *E. B.* t. 189. Alsine *Wahl.*

On sandy sea-shores, frequent. ♃. 5—7.—*Root* long and creeping, slender. *Stems* decumbent at the base; *branches* erect, leafy upwards. *Leaves* large, decussate, connate, fleshy, shining, a little recurved. *Flowers* solitary or 2—3 together, in the axils of the upper leaves, nearly sessile, closing in the shade. *Calyx* ribless. *Petals* white, small, scarcely longer than the *calyx*, distant, broadly ovate, shortly clawed. Surrounding the *germen* are 10 *glands*, alternating with the *stamens*. "*Styles* 3 in the lower, mostly 5 in the upper flowers," *Torr.* and *Gr.* *Capsule* large, roundish, with few large, and black *seeds*. The American *H. oblongifolia* is no longer considered a distinct species; so that this is the only one belonging to the genus.

10. Arenária *Linn.* Sandwort.

Flowers all perfect. *Sepals* 5. *Pet.* 5, conspicuous, undivided. *Stam.* 10, or occasionally 5. *Styles* 3—4. *Caps.* 1-celled, opening with 3—5 entire valves (alternating with the sepals when as many), or with 6—10 valves (or teeth). *Seeds* many, minute.—Named from *arena*, *sand*, the greater number of species growing in sandy soil.

§ 1. *Valves of capsule as many as the styles, entire.* Alsine.

1. A. *vérna* L. (*vernal S.*); stems numerous panicled above, leaves subulate 3-nerved when dry, petals obovate and as well as the capsule somewhat longer than the lanceolate acuminate 3-nerved sepals. *E. B.* t. 512. Alsine *Wahl.*

Rocky and mountainous pastures, in the north of England, Wales, and Cornwall; abundant on Arthur's Seat and in other places about Edinburgh; Mael Duncroisg, Breadalbane: not found at all in the west of Scotland. ♃. 5, 6.—*Stems* 3—4 inches high, slightly hairy, as are the *calyces* and *peduncles.* The *leaves* are usually acute or mucronate, but in the Cornish form, supposed to be the obscure *A. Gerardi* Willd., they are bluntish; *lower ones* crowded, often curved.

2. A. *rubélla* Hook. (*alpine S.*); stems numerous, peduncles terminal downy mostly single-flowered, leaves linear-subulate obtuse 3-nerved, petals elliptic-lanceolate and as well as the capsule shorter than the lanceolate very acute 3-nerved calyx. *E. B. S.* t. 2638. Alsine *Wahl.* Arenaria quadrivalvis *Br.*

Near the summits of the Breadalbane mountains, among soil and broken rocks, rare. Ben Hope, Sutherland. ♃. 7, 8.—This is quite an alpine or arctic plant. It loves to grow with its *root* buried under a loose piece of rock, and late in the summer often acquires a reddish tinge. *Stamens* from a glandular disk. *Styles* usually 4, sometimes 3 or 5; the *valves* of the capsule are, consequently, equally variable.

3. A. *uliginósa* Schl. (*Bog S.*); stems prostrate at the base, then erect with 1—3 flowers on long slender peduncles, leaves subulate semiterete bluntish nerveless, sepals ovate acute 3-nerved about as long as the oblong-obovate petals. *E. B. S.* t. 2890. Spergula stricta *Sw.* (not *Mich.*) Alsine *Wahl.*

Banks of a stream near the top of Widdy-Bank Fell (not far from Langdon foot-bridge), Teesdale, Durham. ♃. 6.—Whole plant glabrous. *Stems* cæspitose. Nerves of the sepals disappearing near the middle, the margin membranaceous and almost white. The specific name *stricta* is the oldest, but this plant is very different from the *A.* (*Alsine*) *stricta* Mich.

4. A. *tenuifólia* L. (*fine-leaved S.*); stems much branched dichotomous panicled above, leaves narrow linear-subulate acute 3-nerved, sepals narrow lanceolate 3-nerved about twice

as long as the oblong petals, capsule 3-valved as long as the calyx. *E. B.* t. 219. Alsine *Wahl.*

Sandy fields; Norfolk, Cambridgeshire, Oxfordshire, &c. Crammond Island, and near Petticur Harbour, Frith of Forth; Scotland (scarcely indigenous and not found of late years). ⊙. 5, 6.— *Stems* 4—6 inches high, glabrous, throughout remarkably slender, especially the *peduncles*. *Petals* varying a little in length, sometimes obovate. Don alone is said to have seen this in Scotland, but his published specimens are from England.

5. A. *fastigiáta* Sm. (*level-topped S.*); stems erect straight, leaves fascicled subulato-setaceous erect, flowers fascicled, sepals much acuminate (white) with two central (green) ribs twice as long as the obovate petals. *E. B.* t. 1744. Alsine *Fenzl.*

On rocks in the mountains of Clova, Angusshire, and also Fifeshire: *Mr. Don.* ⊙. 6.— Sir J. E. Smith rightly distinguishes this, the *A. fasciculata* of Jacq. and De Cand., from the very rare species so named by Gouan. The Clova specimens which we possess from Drummond as well as Don, are only distinguishable from the *A. mucronata* of DC., of which this is perhaps a variety, by the more compact inflorescence, annual (or biennial) root, and erect stem: it is also found in Switzerland and the Pyrenees in warm rocky places, at no great elevation. It is very peculiar in habit, and quite unlike any other British species. *Seeds* "beautifully toothed like a wheel, each on a long slender stalk." *Sm.*

§ 2. *Valves of capsule twice as many as the styles.* Euarenaria.

6. A. *Norvégica* Gunn. (*Norwegian S.*); leaves spathulate-obovate fleshy glabrous, sepals half as long as the corolla ovate acute with 3—5 obscure ribs. *E. B. S.* t. 2852. A. ciliata β. *Willd.*

On Serpentine Hill, Unst, Shetland; *Mr. T. Edmonstone, Jun.* ♃. 7, 8.— Whole plant perfectly glabrous. *Stems* much branched, procumbent; branchlets 1—3-flowered. This has altogether the mode of growth and general aspect of *A. ciliata*; but the *leaves* are succulent and without any ciliæ, and the *sepals* are broader and only obscurely ribbed.

7. A. *ciliáta* L. (*fringed S.*); leaves spathulate roughish ciliate, sepals half as long as the corolla lanceolate acute with 3—5 prominent ribs. *E. B.* t. 1745.

Limestone cliffs, near Ben Bulben, a mountain in Sligo, Ireland. ♃. 6—8.— *Stems* much branched, procumbent or ascending, roughish, downy; branchlets 1—5-flowered. *Petals* ovate.

8. A. *serpyllifólia* L. (*Thyme-leaved S.*); leaves ovate acute subscabrous sessile, calyx hairy its outer sepals 5-ribbed about as long as the corolla. *E. B.* t. 923.

Walls and dry waste places, frequent. ⊙. 6—8.— *Stems* 2—6 inches in length, erect or procumbent, much branched, pubescent.

Leaves small, rather rigid. *Flowers* white, on short stalks, from the forkings of the upper part of the stem or the axils of the leaves. *Petals* as long as the *calyx*. — Mr. W. Wilson finds a *var.* at Bangor, with 5 stamens, and the petals only $\frac{1}{4}$ as long as the calyx, which has prominent ribs.

9. A. *trinérvis* L. (*three-nerved S.*); leaves ovate acute petiolate 3-(rarely 5-)nerved ciliated, flowers solitary, sepals rough on the keel with three obscure ribs, hilum of the seeds with an appendage. *E. B.* t. 1483. Moehringia *Clairv.*

Shady woods and moist places. ☉. 5, 6. — *Stems* 1 ft. high, much branched, pubescent. Upper *leaves* sessile. *Flower-stalks* an inch or more long, from the forkings of the extremities of the stem; in *fruit* spreading, the upper part deflexed. *Petals* oblong-ovate, white, scarcely longer than the acute *segments* of the *calyx*. Distinguished from all the other known species by the seeds; on which account it has been placed in *Moehringia*, along with *M. Muscosa*,—a most unnatural conjunction.

11. Malachium *Fries.* Mouse-ear Chickweed.

Sep. 5. *Pet.* 5, deeply cloven. *Stam.* 10. *Styles* 5, alternate with the sepals. *Caps.* opening with 5 valves opposite to the sepals, each bifid at the apex, many-seeded. — Named from μαλακος, *soft* or *feeble*, from the nature of the plant.

1. M. *aquáticum* Fr. (*Water M.*). Cerastium *L.*: *E. B.* t. 538.

Sides of rivers and ditches, throughout England, from the Isle of Wight to Yorkshire, but not common. ♃. 7, 8. — *Stems* 1—2 ft. long, angular, dichotomously branched and straggling, viscid upwards. *Leaves* cordate-ovate, acuminate, with short scattered hairs on their surface and margin; upper ones sessile, lower ones only petiolate. *Flowers* solitary in the forks of the stem. *Capsule* longer than the calyx. "*Seeds* beautifully marked with close papillæ with stellate bases:" *Bromf.* Very similar to *Stellaria nemorum*, which however differs by the fewer *styles*, the 6 equal *valves* to the capsule, and the *leaves* usually hairy only on the margin.

12. Stellária *Linn.* Stitchwort.

Sep. 5. *Pet.* 5, deeply cloven. *Stam.* 10. *Styles* 3. *Caps.* opening with 6 valves, many-seeded. — Named from *stella*, a *star*; because the corolla spreads in a star-shaped manner.

1. S. *némorum* L. (*Wood S.*); leaves petiolate cordate, upper ones ovate sessile, panicle dichotomous. *E. B.* t. 92.

In moist woods, principally in the north of England and Lowlands of Scotland. ♃. 5, 6. — *Stems* weak, 1—1$\frac{1}{2}$ ft. long, often glabrous below, uniformly downy above, except on the peduncles, where the pubescence sometimes forms a line on one side. *Leaves* very large,

sually glabrous, but rough with extremely minute elevated dots, ccasionally ciliated at the margin, sometimes hairy on both sides. *epals* lanceolate, white at the edges. *Petals* narrow, deeply bifid, ure white, twice as long as the sepals. *Receptacle of seeds* linear, ongated: in all the other species it is very short.

2. S. *média* With. (*common Chickweed* or *S.*); leaves ovate ower ones petiolate upper ones sessile, stems with an alternate ne of hairs on one side, petals 2-partite, stamens 5—10. *E. B.* t. 537. Alsine *L.*

Road-sides and waste places, abundant. ☉. *Fl.* almost the whole ear. — *Stem* weak, with alternate lines of hairs between each pair of eaves, by which the species is readily distinguished. *Leaves* glabrous, he uppermost sessile; the others on foot-stalks which are fringed with airs. *Flowers* small, white, on solitary, axillary and terminal stalks. A slender and apetalous *var.* occurs on the Sussex and Isle of Wight oasts, and about Weybridge, Surrey; its calyx is sometimes hairy, ometimes naked. — This species is a good pot-herb, and small birds re very fond of the seeds.

3. S. *holóstea* L. (*greater S.*); stem nearly erect with 4 rough harp angles, leaves lanceolate much acuminate minutely iliated sessile, petals cloven to the middle twice as long as the erveless calyx. *E. B.* t. 511.

Woods and hedges, frequent. ♃. 4—6. — *Plants* 1—1½ ft. high, ather rigid and brittle, somewhat glaucous. *Flowers* large and with much broader *petals* than the two following, pure white. *Panicle* of ew flowers, with leafy bracteas.

4. S. *glaúca* With. (*glaucous Marsh S.*): quite smooth and glaucous, stem angled nearly erect, leaves linear-lanceolate ntire, flowers upon long solitary axillary footstalks, petals bipartite much longer than the 3-nerved sepals. *E. B.* t. 825.

Marshy places, margins of lakes, &c. ♃. 5—7. — *Stems* 1—1½ ft. high. *Bracts* with scarious margins. *Flowers* next in size to those of *S. holostea.* Readily known from that and *S. graminea* by its narrower, glaucous *leaves*, solitary, axillary *flowers*, and narrower *sepals.*

5. S. *gramínea* L. (*lesser S.*); stem angled nearly erect smooth, leaves linear-lanceolate acute entire glabrous ciliated, panicle much branched, petals bipartite scarcely longer than the 3-nerved sepals. *E. B.* t. 803. — *β. scapigera;* stem short, panicle contracted, leaves pubescent at the margins. S. scapigera *Willd.*: *E. B.* t. 1269.

Dry pastures, fields and heaths, common. — *β.* "By the sides of rivulets in the mountains of Badenoch between Loch Freachd and Loch Laggan." *G. Don.* (In other words, between Dalwhinnie Inn and the Olk Kirk of Laggan.) ♃. 5—8. — *Stem* 1 ft. high, more slender than the two preceding, and readily distinguishable by its much

smaller *flowers*, large and branching *panicle*, 3-nerved *calyx*, and entire *leaves*, which are, moreover, by no means so much acuminated. *Bracts* membranaceous, ciliated. *Anthers* red. The *leaves* have the hairs of the ciliæ in the common form, and of the pubescence in β, decurved. The station assigned by Don to our *var.* β. has been almost universally misquoted: this however is of little consequence, as we now believe that plant to exist nowhere in a wild state, but to be a mere cultivated form of *S. graminea*.[1] Don cultivated it extensively in his garden at Forfar, from which we have specimens. It was originally described by Willdenow, from a plant in the Berlin gardens, who does not say from whom it was received; but it is not even conjectured to have been from Scotland, and has not been found any where else: it was soon introduced into our gardens, treated as an alpine plant, and increased by division, but not by seed, although seed is produced sometimes freely.

6. S. *uliginósa* Murr. (*Bog S.*); leaves ovato-lanceolate entire with a callous tip, flowers in dichotomous panicles, petals bipartite shorter than the sepals, which are combined at the base *E. B.* t. 1074. S. graminea β. *L.* Larbrea *St. Hil.*

In ditches and rivulets, frequent. ⊙. 5, 6.—This and the preceding species, besides having the *sepals* combined at the base, have truly perigynous *petals*. Its general habit is that of *Stellaria*, from all the other species of which it is distinguished by the comparatively minute *petals*.

13. Holósteum *Linn.* Jagged Chickweed.

Cal. of 5 sepals. *Pet.* 5, jagged at the point. *Stamens* 3—5. *Styles* 3. *Caps.* subcylindrical, 1-celled, many-seeded, opening at the extremity with 6 teeth.—Named from ὁλος, *all*, and οστεον, *bone*, by antiphrasis, the texture being the very reverse, soft and delicate.

1. H. *umbellátum* R. (*umbelliferous J.*); leaves elliptical ovate acute, flowers umbellate, peduncle pubescent viscid, pedicels reflexed after flowering at length erect. *E. B.* t. 27.

Rare, on old walls about Norwich, Bury, Eye, and Yarmouth. Hills near Bowling Bay, Scotland. ⊙. 4.—A singular and interesting plant, the original *Holosteum* of Linnæus.

14. Mœ'nchia *Ehrh.* Mœnchia.

Cal. of 4 sepals. *Pet.* 4, entire. *Stam.* 4 or 8. *Styles* 4. *Caps.* of 1 cell, many-seeded, opening with 8 teeth at the extremity.—Name given in compliment to *Conrad Mœnch*, Professor of Botany at Hesse Cassel.

[1] In the Glasgow Botanic Garden we have repeatedly observed *S. graminea* to spring up in the vicinity of pots in which *S. scapigera* was cultivated, and about which it had shed its seed.

1. M. *erécta* Sm. (*upright M.*). Sagina *L.*: *E. B.* t. 609.

Pastures, in a gravelly soil. ⊙. 5, 6.—*Stem* 2—4 inches high, erect or frequently a little reclining at the base, glabrous as well as the *leaves*, which are opposite, linear-lanceolate, acute, rigid, glaucous. *Sepals* large, acuminate, white and membranous at the margin. *Pet.* lanceolate, as long as the calyx. *Caps.* as in *Cerastium*.

15. Cerástium *Linn.* Mouse-ear Chickweed.

Cal. of 5 sepals. *Pet.* 5, cloven. *Stam.* 10. *Styles* 5. *Caps.* bursting at the top with 10 equal teeth.—Named (κερας, a *horn*) from the rather long and curved capsules of some species.

* *Petals not longer than the calyx.*

1. C. *vulgátum* L. (*broad-leaved M.*); hairy nearly erect viscid above, leaves ovate, bracteas herbaceous, petals as long as the calyx about half the length of the curved capsule, flowers mostly subcapitate, calyces oblong longer than their pedicels. *E. B.* t. 789. C. glomeratum *Thuil.*

Fields, pastures, and road-sides, common. ⊙. 4—9.—*Stem* 6—10 inches high, branched below, dichotomous above. *Flowers* at first subcapitate, afterwards occasionally in dichotomous panicles. *Petals* narrow, bifid, sometimes wanting. *Caps.* cylindrical, curved upwards.

2. C. *viscósum* L. (*narrow-leaved M.*); leaves oblong-lanceolate, stem hairy viscid spreading, lower bracteas herbaceous upper ones with narrow membranous margins, flowers at first almost fascicled afterwards in elongated dichotomous cymes, calyx about as long as the pedicel and the corolla, about half the length of the curved fruit. *E. B.* t. 790. C. triviale *Link.*

Pastures and waste places, wall-tops, &c. ♃ ? or rather ⊙. *Fl.* Spring and Summer.—Much resembling the last, but a larger, coarser, and spreading plant, with longer and narrower *leaves*; *calyces* shorter than their footstalks in general, especially when in fruit. Judging from the figure, *C. pumilum*, Curtis Flora Lond., seems but the pentandrous or early-flowering state of this species.

3. C. *semidecándrum* L. (*little M.*); leaves ovate or oblong, stem hairy viscid suberect simple bearing a few-flowered cyme, upper half of all the bracts and the sepals membranous, calyx scarcely shorter than the pedicel about twice as long as the petals shorter than the fruit. *E. B.* t. 1630.

Dry waste places in sandy soil, on wall-tops, &c., frequent. ⊙. 3—5.—This displays itself, as Sir J. E. Smith well observes, in early spring, on every wall, and withers away before the *C. viscosum* begins to put forth its far less conspicuous blossoms. *Leaves* usually hairy, sometimes glabrous. *Stamens* usually 5, often 4, occasionally

10. *Fruit* more or less curved, variable in length from a little longer than the calyx to twice as long.

4. C. *tetrándrum* Curt. (*four-cleft M.*); leaves ovate or oblong, stem hairy and somewhat viscid dichotomous with flowers in the forks, the whole a leafy cyme, lower bracteas herbaceous some of the uppermost and the sepals with a narrow membranaceous margin, calyx rather longer than the petals $1\frac{1}{2}$—4 times shorter than the pedicels, fruit usually the length of the calyx rarely a little longer. C. atrovirens *Bab.* C. pedunculatum *Bab.* Sagina cerastoides, *E. B.* t. 166.

Waste ground, walls, and sandy places, especially near the sea. On the east coast of England (Yarmouth), the south (Sussex), and in Wales. About Edinburgh, banks of the Tweed, Lanark, Campsie, Ayr, &c. Howth, Ireland. ☉. 5—7. — *Stamens* 4 or rarely 5, never, so far as we have seen, more numerous. *Flowers* usually 4-cleft. "Petals inversely heart-shaped, shorter than the taper-pointed *calyx* which is nearly as long as the capsule." *Sm.* — In comparing this and the preceding species, it may be proper to state that by the lowest bracteas we mean the pair of leaves at that fork where the first pedicel appears: in the three species already noticed the bracteas become suddenly smaller, whereas in *C. tetrandrum* they remain about as large as the leaves, and similar to them, after the cyme has been repeatedly forked.

** *Petals longer than the calyx.*

5. C. *arvénse* L. (*Field C.*); leaves linear-lanceolate, sepals somewhat acute, bracteas membranaceous at the margins and apex, petals twice as long as the calyx. — *α.* leaves pubescent especially at the base. *E. B.* t. 93. — *β. strictum*, stem and leaves glabrous.

Dry, sandy, and gravelly places; less frequent in Scotland. — *β.* Arran, Ireland. ♃. 4—8. — *Stems* much branched and decumbent at the base, a span long, slender. *Flowers* large, pure white, 2 or 3 on terminal stalks. *Capsule* scarcely longer than the *calyx*. Seeds small, acutely tubercled.

6. C. *alpínum* L. (*hairy alpine C.*); subglabrous or clothed with long white soft silky hairs, stem ascending, leaves elliptical ovate or oblong, panicle dichotomous few-flowered, bracteas herbaceous with usually a narrow membranaceous margin, capsule cylindrical-oblong slightly curved. *E. B.* t. 472. C. latifolium, *Lightf. Scot.* i. p. 242. t. 9.

Frequent on the Highland mountains of Scotland. Striden Edge, Helvellyn, England. Very rare in Wales, and not now to be found on Snowdon. ♃. 6—8. — Much branched below and creeping, then erect, 3—5 inches high. *Leaves* sometimes lanceolate. *Flowers* large, handsome, white. *Petals* bifid at the point. "Seeds small, acutely tubercled." *H. Watson.* — The more glabrous form is the

C. alpinum of the French botanists, while the silky one is the *C. tomentosum* Lam.

7. C. *latifólium* L. (*broad-leaved alpine C.*); subglabrous or clothed with short rigid yellowish pubescence, stems prostrate cæspitose, leaves elliptical-ovate, branches mostly single-flowered, bracteas herbaceous, capsule cylindrical oblong nearly straight. *E. B.* t. 473.

Mountains of Wales; Clogwyn y Garnedd, and Clogwyn du'r arrdhu, Snowdon, but rare. Ben Lomond, Ben Nevis, Ben Ghlo, &c., in Scotland. ♃. 5—8. — Never clothed with long white hairs, of a deeper green than *C. alpinum*, sometimes almost glabrous. The *stems* are dichotomous and bare of *leaves* below, and much buried under rocks and stones. *Flowers* solitary, rarely 2, terminal on the branches; when more than one the bracteas are generally oval and foliaceous. "*Seeds* large, rugose." *H. Watson.* A dwarf variety occurs in Unst, Shetland. We agree with Mr. W. Wilson in thinking that there exists scarcely any difference either in flower or fruit between this and the preceding. In both, the *capsules* are broadly oblong, shining, almost twice as long as the calyx, and nearly straight.

8. C. *trígynum* Fries (*Stitchwort C.*); stems decumbent with an alternate hairy line, leaves oblong-spathulate, peduncles 2 or 3 mostly terminal downy, styles mostly 3. Stellaria cerastoides *L.*: *E. B.* t. 911.

Breadalbane mountains of Scotland, and mountains to the north of that great range. ♃. 7, 8. — *Stem* 4—6 inches long, the lower part bare of leaves and much branched. *Leaves* glabrous or hairy, subsecund and subfalcate, as observed by Wahlenberg; their points callous. *Flowers* large, pure white. Sir J. E. Smith states that the *styles* are sometimes 4 or 5; and the *capsules*, in our specimens, have usually 6, but some 8 or 10 teeth.

Ord. XV. LINACEÆ *De Cand.*

Sepals 4—5, imbricated in æstivation, persistent. *Petals* 4—5, with a twisted æstivation, very fugacious. *Stamens* 4—5, united at the base into an hypogynous ring, with small teeth (abortive stamens) between them. *Ovary* with 3—5 cells, and as many *styles*. *Stigmas* capitate. *Capsule* globose, crowned with the permanent base of the styles, 3—5-celled; each cell partially divided into 2 by a spurious dissepiment, and opening with 2 valves at the apex. *Seeds* 1 in each spurious cell, inverted. *Embryo* straight, large, thin, with little or no *albumen*. — *Mostly* herbs, *with entire leaves and without stipules*. — *Linum cathartícum* is a purgative: *L. usitatissimum* is the *common Flax*.

1. Linum. Petals, stamens and styles 5.
2. Radiola. Petals, stamens and styles 4.

1. Línum *Linn.* Flax.

Sep. 5, persistent. *Pet.* 5. *Stam.* 5. *Styles* 5. *Seeds* ovate, compressed. — Named from *Lin, thread*, in Celtic and also in modern Gaelic.

1. L. **usitatíssimum* L. (*common F.*); leaves alternate lanceolate, sepals ovate acute 3-nerved ciliated, petals crenate, stem subsolitary. *E. B.* t. 1357.

Corn-fields, not unfrequent. ☉. 7. — *Stem* 1—1½ ft. high, slender corymbosely branched above. *Leaves* distant. *Flowers* large, purplish-blue. Valves of *capsule* glabrous. — This, as may be inferred from its name, yields in the strong fibres of the bark of the stem, the valuable flax of commerce; while from the seed a valuable oil is expressed, known by the name of *Lint-seed oil.* The seeds, too, are highly mucilaginous, and much employed in poultices, fomentations, &c.

2. L. *perénne* L. (*perennial blue F.*); leaves alternate linear acute, sepals obovate obtuse obscurely 5-ribbed glabrous, stems numerous from the same root, peduncles erect. *E. B.* t. 40.

Chalky hills: Cambridgeshire; Hinton, Northamptonshire; Westmoreland, Norfolk, and Suffolk. Near Monkstown, Ireland. ♃. 6, 7.

3. L. *angustifólium* Huds. (*narrow-leaved pale F.*); leaves alternate linear-lanceolate acuminate 3-nerved, sepals elliptical three-ribbed mucronate, stems numerous from the same root. *E. B.* t. 381.

Sandy and chalky pastures, principally near the sea: Kent, Sussex, Norfolk, Suffolk, Isle of Wight, Cornwall. Near Liverpool, and Plymouth. About Dublin. ♃. 5—9. — All the three British species of this division have a great similarity in their habit. The best characters, as observed by Sir J. E. Smith, are taken from the calyx. In the present the *petals* are of a paler blue than in the preceding species, and smaller in proportion to the size of the calyx. "*Stems* lax, very irregularly branched. Valves of *capsule* hairy." — *Bromf.*

** *Leaves opposite.*

4. L. *cathárticum* L. (*purging F.*); leaves opposite oblong, stem dichotomous above, sepals elliptical acuminate 1-nerved. *E. B.* t. 382.

Pastures, everywhere abundant. ☉. 6—9. — *Stem* slender, upright, 2—6 inches high. *Leaves* varying from oblong to obovato-lanceolate. *Flowers* gracefully drooping before expansion, white, small. *Petals* oblong, sometimes acute, often obtuse.

2. Radíola *Gmel.* Flax-seed.

Sep. 4, united up to their middle, and mostly 3-cleft. *Pet.*

stam. and *styles* 4. — Named from *radius*, a *ray*; probably in consequence of the radiating nature of the branches.

1. R. *Millegrána* Sm. (*Thyme-leaved F.*). *E. B.* t. 893. Linum Radiola *L.*

Moist gravelly and boggy soils, in many places. ☉. 7, 8. — A very minute plant, 1—2 inches high, repeatedly dichotomous. *Leaves* distant, ovate, entire, glabrous, under a high power of the microscope appearing dotted. *Flowers* axillary and terminal, solitary, on short peduncles. *Cal.* segments united, so as to form a monophyllous many-toothed calyx.

Ord. XVI. MALVACEÆ *Juss.*

Calyx 5-cleft, valvate in æstivation. *Corolla* of 5 *petals*, regular, twisted in æstivation. *Stamens* indefinite, monadelphous, often united with the petals at their bases. *Anthers* reniform, 1-celled. *Ovary* 1. *Styles* single or several combined. *Stigmas* several. *Fruit* a capsule, with many cells and valves; or composed of many carpels, which are dehiscent or indehiscent, collected into a compact body, or placed in a whorl round the base of the *style*. *Albumen* none, or fleshy, but not abundant. *Embryo* curved, with twisted and doubled *cotyledons*. — Herbs, *or* shrubs, *or* trees. Leaves *alternate*, *with* stipules. Flowers *axillary*.—They abound in mucilage, especially the seeds. The stems and roots afford an excellent fibre. *Gossypium* yields the *Cotton*.

1. Lavatera. Involucre 3-lobed.
2. Malva. Involucre 3-leaved.
3. Althæa. Involucre 6—9 cleft.

1. Lavatéra *Linn.* Tree-Mallow.

Cal. with a 3-lobed *involucre*. *Carpels* numerous, circularly arranged, 1-seeded. — Named in honour of the two *Lavaters*, friends of Tournefort.

1. L. *arbórea* L. (*Sea T.*); stem arborescent, leaves with about 7 angles downy plaited, peduncles axillary aggregated single-flowered shorter than the petioles. *E. B.* t. 1841.

On maritime, always insulated, rocks, in the south and west of England. Islet off the coast of Anglesea. Isles in the Frith of Forth. Ireland. ♂. 7—9. — *Stem* 3—5 ft. high. *Flowers* large, purple rose-coloured, shining, darker at the base of the petals.

2. Málva *Linn.* Mallow.

Cal. with a 3-leaved *involucre*. *Carpels* numerous, circularly arranged, 1-seeded. — Name altered from μαλαχη, *soft*, in allusion to the emollient nature of the species.

1. M. *sylvéstris* L. (*common M.*); stem usually erect herbaceous, leaves with 5—7 rather acute deep lobes, peduncles and petioles hairy, fruit glabrous reticulately wrinkled. *E. B.* t. 671.

Waste places and way-sides; not common in Scotland. ♃. 6—9. — *Stem* 2—3 ft. or more high, branched. *Flowers* 3 or 4 together, axillary. *Petals* obcordate, usually large and of a purplish rose-colour with deeper veins, combined by the base of their claws. Dr. Bromfield finds in the Isle of Wight a variety with flowers of a sky-blue colour, another with prostrate stems, and a third with small flowers. Whole *plant*, especially the *fruit*, mucilaginous and emollient.

2. M. *rotundifólia* L. (*dwarf M.*); stem decumbent, leaves roundish cordate slightly and bluntly 5-lobed, fruit-stalks bent down, petals 2—3 times longer than the calyx, fruit pubescent, carpels smooth rounded on the edge. *E. B.* t. 1092.

Waste places and way-sides, not unfrequent in England; rare in Scotland, as about Edinburgh. ♃. 6—9. — *Stems* 10—12 inches long, branching only from the root. *Flowers* small, roundish. *Bracteas* linear-lanceolate. *Carpels* meeting at the line of junction with a straight line. Fries and some other foreign botanists consider the next to be the true *M. rotundifolia* L., and call this *M. vulgaris*, or *M. neglecta.*

3. M. **pusílla* Sm. (*small-flowered M.*); stem decumbent, leaves roundish-cordate slightly and bluntly 5-lobed, fruit-stalks bent down, petals the length of the calyx, fruit pubescent, carpels slightly reticulated margined. *E. B.* t. 241. M. borealis *Liljebl.*

Hythe, Kent: Hudson. ☉? 7. — Of this as a British plant we know nothing; only one specimen seems ever to have been found, and that was probably introduced with corn: seeds taken from it yielded the specimen from which the figure in the *E. B.* was made in 1795. Supposing it to be a distinct species from the last, the name originally given by Smith seems to be the oldest; but the pubescence of the fruit and reticulation of the carpels appear to vary so much in several allied species, that we fear these characters are only of secondary importance.

4. M. *moschàta* L. (*Musk M.*): stem erect, radical leaves reniform in 5 or 7 broad cut lobes, cauline ones 5-partite pinnato-multifid their segments linear, calyx hairy, leaflets of the involucre linear. *E. B.* t. 754.

Meadows, pastures, and road-sides, especially in a gravelly soil; not unfrequent. ♃. 7, 8. — *Stem* 2—3 ft. high. *Flowers* large, beautiful, rose-coloured, 1—2 from the axils of the terminal leaves. The foliage yields a faint musky smell if drawn through the hand.

[M. *verticillata* L., (Hook. Lond. Journ. of Bot. vi. p. 259., tab. 7.) an erect plant, having leaves with 5 deep acute lobes, nearly sessile flowers scarcely longer than the calyx, and glabrous carpels

rounded on the edge and scarcely reticulated, has been found near Llanelly in Wales; but it is neither a native of Britain, nor of Europe, unless as a cultivated plant: the wild state, which is unknown, may exhibit quite a different aspect and character.]

3. Althæ'a *Linn.* Marsh-Mallow.

Cal. with a 6—9-leaved *involucre*. *Carpels* numerous, circularly arranged, 1-seeded. — Name: $\alpha\lambda\theta\omega$, to *cure;* from its healing properties.

1. A. *officinális* L. (*common M.*); leaves soft and downy on both sides cordate or ovate toothed, entire or 3-lobed, peduncles axillary many-flowered much shorter than the leaves. *E. B.* t. 147.

Marshes, mostly near the sea. Abundant in Hampshire. Rare and scarcely indigenous to Scotland, as the Solway Frith, Arran, and Campsie. ♃. 8, 9. — *Stem* 2—3 ft. high, remarkable for the dense, exquisitely soft, and starry pubescence of the *leaves* and *stems*. *Flowers* 3—4 together, on axillary *stalks*, large, pale rose-colour. — Affords an abundant mucilage, and a decoction of it is in very general use for the cure of cough. In France it is made into lozenges, called *Pâtes de Guimauve*.

2. A. **hirsúta* L. (*hispid M.*); leaves cordate rough with hairs, lower ones obtusely upper palmately and acutely lobed crenate, stem hispid, peduncles single-flowered longer than the leaves. *E. B. S.* t. 2674.

Fields and waste places, rare. Between Cobham and Cuxton, Kent. ☉. 6, 7. — Remarkable for its very hispid *stems* and *calyces*.

Ord. XVII. TILIACEÆ *Juss.*

Sepals 4—5, deciduous, with valvular æstivation. *Petals* 4—5, often with a depression at the base, sometimes wanting. *Stamens* distinct or polyadelphous at the base, generally indefinite. *Anthers* 2-celled, opening longitudinally, introrse. *Glands* 4—5, adnate with the petals to the stalk of the ovary. *Ovary* 1—10-celled. *Style* 1. *Capsule* with one or many *seeds* in each cell. *Albumen* fleshy, including an erect *embryo*. — Trees *or* shrubs, *with stipuled alternate* leaves, *and a mucilaginous wholesome juice, the inner* bark *exceedingly tenacious*. — Russian- or bast-matting is the inner bark of the Lime.

1. Tília *Linn.* Lime.

Cal. 5-partite. *Pet.* 5, with or without a *nectary* at the base. *Ovary* 5-celled; cells with 2 ovules. *Fruit* 1-celled, 1—2-

seeded. — Name of obscure origin, perhaps from the Celtic; in modern Gaelic, the *Lime* is called *Teile*.

1. T. *parvifólia* Ehrh. (*small-leaved L.*); nectaries none, leaves glabrous except a woolly tuft in the axils of the nerves and veins beneath, branches and petioles glabrous, fruit oblique with filiform ribs chartaceous brittle at length nearly glabrous. *E. B.* t. 1705. T. microphylla *Vent.*

Woods in Essex, Lincolnshire, &c. Sussex, Wales; "safely to be reckoned indigenous:" *Borrer.* ♄. 7, 8. — *Leaves* when young covered beneath with stellate hairs. Angels or ribs of the *fruit* often concealed by the pubescence before it falls off.

2. T. **Europæ'a* L. (*common L.* or *Linden-tree*); nectaries none, leaves twice the length of the foot-stalks quite glabrous except a woolly tuft in the axils of the nerves and veins beneath, branches and petioles glabrous, fruit coriaceous downy nearly equal-sided with slightly prominent angles. *E. B.* t. 610. T. intermedia *DC.*

Woods and hedge-rows, probably not indigenous. ♄. 7.— *Leaves* pale beneath, but scarcely glaucous. A large and handsome *tree;* its *flowers* "at dewy eve distilling odours," yellowish-green, on a stalked *cyme*, springing from a large lanceolate foliaceous *bractea*, which falls off with the fructified *cymes*. Best distinguished from the last by the fruit. — Linnæus is said to have derived his own name from the Swedish *Lin*, our Linden- or Lime-tree.

3. T. **grandifólia* Ehrh. (*broad-leaved downy L.*); nectaries none, leaves downy especially beneath with solitary hairs, axils of the nerves and veins woolly, young branches and petioles hairy, fruit woody downy with prominent angles. *E. B. S.* t. 2720.

Woods and hedges, in several places; scarcely wild. Blair Athol, Scotland. Near Edinburgh. ♄. 6, 7. — The angles or ribs of the fruit are often obscure when young, but are afterwards prominent. The number of flowers in the umbel or cyme varies from 2 to 9 in all our British species.

Ord. XVIII. HYPERICACEÆ.

Sepals 4—5, distinct or cohering, persistent, frequently with glandular dots. *Petals* 4—5, with a twisted æstivation and often black dots. *Stamens* numerous (15 or more), polyadelphous, rarely monadelphous or quite distinct. *Anthers* small, versatile. *Ovary* single. *Styles* 3—5, rarely combined. *Stigmas* simple. *Fruit* a *capsule* of several valves, rarely baccate, several-celled (or imperfectly so by the valves being curved inwards, and scarcely meeting in the axis), or 1-celled: dehiscence septicidal. *Seeds* minute, numerous, on a receptacle in

the axis, or on the incurved margins of the valves. *Embryo* straight. *Albumen* 0.— Herbs *or* shrubs, *with generally opposite* leaves, *mostly marked with pellucid dots, and commonly yellow* flowers. Aromatic and resinous, juice sometimes purgative.

1. HYPÉRICUM *Linn.* St. John's Wort.

Cal. 5-partite, or of 5 sepals, inferior. *Pet.* 5. *Filaments* united at the base into 3 or 5 sets (or sometimes almost distinct). *Caps.* many-seeded. — Name: the *ὑπηρικον* of Dioscorides.

* *Petals unequal-sided, without any glands or appendages at the base or between the sets of the shortly connected stamens.*

† *Styles* 5. *Petals deciduous.* Eremanthe.

1. H. * *calycínum* L. (*large-flowered St. J.*); flowers solitary, segments of the calyx unequal obovate obtuse, leaves oblong, stem shrubby branched square. *E. B.* t. 2017.

Bushy places. Naturalized at Largs, and Balmacarra, Scotland; Ryde, Isle of Wight; and near Cork, Ireland. ♄. 7—9. — *Flowers* very large, yellow, as in all the genus. *Petals* and sets of *stamens* 5, deciduous. *Ovary* and *capsule* 5-celled, or 1-celled towards the summit.

†† *Styles* 3. *Petals deciduous. Stamens shortly pentadelphous.* Androsæmum.

2. H. *Androsæ'mum* L. (*Tutsan*); styles very short and recurved, capsule pulpy nearly globose, stem shrubby compressed, sepals unequal, oval at length larger than the capsule, leaves ovate sessile. *E. B.* t. 1225.

Hedges and shrubby places; Norfolk; Herts; Kent; between Dorking and Guildford; and at Gt. Marlow, Bucks. Not rare in Devon, Hampshire, and Cornwall. Frequent in Ireland, and the west of Scotland. ♄. 6—8. — *Stems* 2 ft. high. *Leaves* large. *Cymes* terminal, of rather large *flowers*. *Stamens* deciduous. *Ovary* imperfectly 3-celled. *Fruit* fleshy and resembling a berry, especially when unripe.

[Mr. Babington, in the Ann. Nat. H., May, 1853, p. 362, describes, under the name of *H. Anglicum* Bert.?, a plant found by Dr. Balfour in August, 1852, at Glanmire near Cork. This has been long known to collectors in the South of Ireland, but not considered native: see Phyt. v. p. 77. What species Bertoloni intends by the inapplicable name of *Anglicum*, we do not know; but the Irish one appears only a slight variety of *H. hircinum*, and chiefly to differ from Sardinian specimens of that species by the larger size of the leaves: it is readily distinguished from *H. Androsæmum* by the narrower and sharper sepals which do not enlarge with the fruit, and the long styles; its leaves are obtuse or acute, rounded or cordate at the base, rigid or flaccid, and small or large, according to the situation.]

††† *Styles* 3. *Petals permanent. Stamens slightly triadelphous.* (*Capsule* 3-*celled septicidal.*) Euhypericum.

§ *Sepals entire at the margins or slightly toothed, but nearly without glands.*

3. H. *perforátum* L. (*common perforated St. J.*); stem 2-edged, leaves oblong obtuse with pellucid dots, veins opaque, sepals erect, lanceolate acute.—*α.* leaves elliptic oblong. *E. B.* t. 295.—*β.* leaves linear-oblong, sepals more or less toothed.

Woods, thickets, hedges, &c., abundant. ♃. 7—9.—*Stem* 1—2 ft. or more high, branched. *Leaves* with sometimes only a few pellucid dots, but never with the pellucid venation of the next. There are minute black dots on the tips of the *cal.*, *cor.*, and often on the *leaves*. Valves of the *capsule* with two glandular lines on the back, their sides wrinkled with ovoid transverse vesicles.

4. H. *dúbium* Leers (*imperforate St. J.*); stem more or less quadrangular, leaves elliptic ovate obtuse usually nearly destitute of pellucid dots, veins pellucid, sepals recurved oblong or lanceolate entire or denticulate. *E. B.* t. 396. H. maculatum *Crantz.*

Rather mountainous woods in various places; not uncommon in Arran, Cumbræ, and both sides of the Clyde. ♃. 7, 8.—Similar in many respects to the last; for which, perhaps, it is not unfrequently mistaken: the leaves are sometimes as much covered with pellucid dots, so that the only constant mark is in the veins, and even these in the older and lower leaves become frequently opaque. *Corolla* often marked with small black dots. In this, as well as in the following six species, the capsule is striated at the back, with copious slender longitudinal glands.

5. H. *quadrángulum* L. (*square-stalked St. J.*); stem herbaceous 4-angled somewhat branched, leaves ovate with pellucid dots, sepals erect lanceolate acuminate. *E. B.* t. 370.

Moist pastures, sides of ditches and rivulets. ♃. 7.—*Stem* 1—2 ft. high. *Panicles* terminal. "Slightly fœtid like *H. hircinum.*" *Bromf.*

6. H. *humifúsum* L. (*trailing St. J.*); flowers terminal subcymose, stem compressed prostrate, sepals unequal outer ones oblong obtuse mucronate, leaves oblong obtuse glabrous. *E. B.* t. 1226.

Gravelly, heathy, and boggy pastures, stone walls, &c., in many places. ♃. 7.—*Stem* slender, about a span long. *Stamens* not more than 5—8 in each of the three sets; whereas in the three preceding there are 10—25 in each. *Styles* very short. *Cor.* with black dots, as well as the *calyx*, and even glandular serratures are sometimes to be seen towards the points of the sepals, particularly of the inner lanceolate ones, but not, we think, so as to justify the plant being placed in the next division

§§ *Margins of the sepals with glandular serratures.*

7. H. *linarifólium* Vahl (*linear-leaved St. J.*); flowers terminal cymose, stems ascending terete, sepals slightly unequal all lanceolate acute their margins with numerous (black) spots and glandular serratures, leaves linear obtuse the margins revolute. *E. B. S.* t. 2851.

Cape Cornwall: on dry slopes of hills in several parts of Jersey, particularly on a hill between Ann Port and St. Catherine's Bay: banks of the Teign, Tamar, and Tavy, Devon. ♃. 7, 8.— *Flowers* small. *Stem* procumbent below. *Stamens* 30 or more. *H. humifusum* differs from this by its prostrate slightly two-edged stems; oblong, obtuse, and mucronate sepals; oval-oblong leaves; smaller flowers; fewer stamens; broader capsules and shorter styles. *Bab.*

8. H. *púlchrum* L. (*small upright St. J.*); sepals broadly ovate obtuse with (black) glandular serratures, stem erect glabrous, leaves cordate amplexicaul glabrous. *E. B.* t. 1227.

Dry woods and heaths, frequent. ♃. 6, 7.— *Stem* 1—2 ft. high, slender, erect, rigid, branched. *Flowers* beautiful, in loose *panicles*, yellow, tipped, before expansion, with red. *Anthers* red.

9. H. *hirsútum* L. (*hairy St. J.*); sepals lanceolate acute with (black) glandular serratures, stem erect terete pubescent, leaves ovate or oblong slightly stalked somewhat downy beneath. *E. B.* t. 1156.

Woods and thickets, especially in a chalky soil. ♃. 7, 8.— *Stem* 2 ft. high. *Leaves* rather large, more or less downy, especially beneath.

10. H. *montánum* L. (*Mountain St. J.*); flowers paniculato-corymbose, sepals lanceolate acute with (black) glandular serratures, stem erect terete and as well as the ovate leaves glabrous. *E. B.* t. 371.

Bushy hills, in England, especially in a chalky or gravelly soil, but not common. ♃. 7, 8.— *Stem* 1½—2 ft. high. *Leaves* rather large, more or less perforated, distant, especially above; furnished with black glandular dots near the margins. *Bracteas* and *calyx* beautifully fringed with shortly-stalked glands. *Petals* without dots or glands.

11. H. * *barbátum* Jacq. (*bearded St. J.*); corymbs terminal, sepals lanceolate fringed with long-stalked glands, stem erect terete, leaves ovate with (black) scattered dots beneath. *E. B.* t. 1986.

Side of a hedge near Aberdalgie in Strathearn, Perthshire: *G. Don.* ♃. 9, 10.— *Stem* 1 ft. or more high. Very distinct in the long glandular hairs of its *calyx*. *Petals* copiously dotted, often toothed or ciliated at the extremity. *Capsule* transversely wrinkled. We possess a specimen from Don; but we do not believe that this species was ever found wild in Scotland.

** *Petals equal-sided. Stamens in each set united to above the middle, with a scale between the sets. Styles* 3. Elodea.

12. H. *elódes* L. (*Marsh St. J.*); sepals with (reddish) glandular serratures glabrous, leaves roundish shaggy, stem terete creeping, panicle of few flowers. *E. B.* t. 109.

Spongy bogs, not unfrequent. Rare in Scotland. 2. 7, 8.—*Stem* 6—8 inches long. *Flowers* few, panicled, terminal, pale yellow. *Petals* persistent, with a fringed appendage at the base. *Stamens* 15, triadelphous. *Ovary* and *fruit* 1-celled.

Ord. XIX. ACERACEÆ *Juss.*

Calyx 4—5—9-partite, imbricated in æstivation. *Petals* of the same number, with scarcely any claw, inserted into the margin of an hypogynous disk, or wanting. *Stamens* about 8, inserted on the disk. *Ovary* 2-lobed, 2-celled. *Style* 1. *Stigmas* 2. *Fruit* a double *Samara*, each 1-celled with 1 or 2 erect *seeds*. *Albumen* 0. *Embryo* curved, with foliaceous wrinkled *cotyledons*, and an inferior radicle.—Trees, *of the temperate parts of the northern hemisphere.* Leaves *generally simple and lobed;* flowers *often polygamous.* — *Acer saccharinum* of N. America yields *Maple Sugar.*

1. A'cer *Linn.* Maple.

Flowers polygamous. *Cal.* lobed or partite. *Cor.* of several petals. Named from *acer*, *sharp* or *hard* (*ac*, Celtic), on account of the hardness of the wood, which was employed in fabricating spears, spikes, &c.

1. A **Pseúdo-plátanus* L. (*greater M.* or *Sycamore*); leaves 5-lobed unequally serrate, racemes pendulous, wings of fruit slightly diverging. *E. B.* t. 303.

In hedges, plantations, and about houses. ♄. 5, 6.—A large *tree*, with spreading *branches* and ample *leaves*. *Flowers* greenish. *Fruit* glabrous, furnished with two long membranaceous wings, which greatly aid in its dispersion. The *wood* is used for bowls and trenchers and other turnery.

2. A. *campéstre* L. (*common M.*); lobes of the leaves mostly 5 inciso-crenate, racemes somewhat corymbose upright subtomentose, wings of fruit diverging horizontally. *E. B.* t. 304.

Woods and thickets, not common in Scotland, and perhaps neither indigenous there nor in Ireland. ♄. 5, 6.—A small *tree*, with rough *bark*, full of deep fissures. *Leaves* small. *Wood* often beautifully veined, and then much prized.

Ord. XX. GERANIACEÆ *Juss.*

Sepals 5, persistent, with an imbricative æstivation. *Petals* 5, with a claw. *Stamens* generally monadelphous and twice as

many as there are petals, some occasionally abortive. *Ovary* 5-lobed, terminated by a long thick beak (*torus* or *gynobase*), and 5 *stigmas*. *Carpels* 5, 1-celled, ultimately separating from the base of the beak, together with a long elastic awn (the *style*). *Seed* solitary, without *albumen*. *Embryo* curved. *Cotyledons* convolute and plaited. — Herbs *or* shrubs *with leaves opposite at the joints, or alternate and then opposite the peduncles. No tendrils.*

1. GERANIUM. Capsules with a long glabrous recurved awn.
2. ERODIUM. Capsules with a long spiral awn, which is bearded on the inside.

1. GERÁNIUM *Linn.* Crane's-bill.

Pet. regular. *Stam.* 10, slightly monadelphous; 5 outer ones opposite the petals, rarely sterile; the other 5 alternating, larger, with a *gland* at their base. *Caps.* each with a long glabrous recurved awn. — Name: γεραvιον of the Greeks, from γερανος, *a crane*; the fruit resembling the beak of a crane.

* *Peduncles* 1-*flowered.*

1. G. *sanguíneum* L. (*bloody C.*); leaves nearly orbicular in 5—7 deep lobes each of which is trifid, carpels even with bristly hairs at the summit, seeds minutely wrinkled and dotted. — *α.* flowers purple. *E. B.* t. 272. — *β.* prostrate, flowers flesh-coloured with purple veins. G. Lancastriense *With.*

Alpine or limestone pastures, in many places; but not very general. — *β.* Sands in Walney Island, Lancashire. 4. 7. — *Stem* 1—1½ ft. high, swelling at the joints. *Peduncles* axillary, long. *Flowers* large, handsome.

** *Peduncles* 2-*flowered. Root perennial.*

2. G. *phæ'um* L. (*dusky C.*); peduncles opposite the leaves, calyx slightly awned, petals waved, capsules hairy below transversely wrinkled above, stem erect. *E. B.* t. 322.

Woods and thickets, but usually the outcast of a garden. 4. 5, 6. — *Stem* 2 ft. or more high, dichotomously branched. *Leaves* 3—7-lobed, lobes acute, cut and serrated. *Flowers* very dingy, purple-black: a *var.* with white flowers is found on the sands of Barrie near Dundee.

3. G. * *nodósum* L. (*knotty C.*); stem glabrous, leaves opposite with 5 or 3 deep pointed serrated lobes, petals with a deep notch, sepals long-awned, capsules even downy all over. *E. B.* t. 1091.

Said to have been gathered in the mountainous parts of Cumberland, and between Hatfield and Welwyn, Herts; but no specimens have been observed there for many years. Banks of the Tweed. 4. 5—8. —

Allied to this in the fruit and in several other respects, but differing by the hairy *stem*, is *G. striatum*, stated to grow on a rabbit-warren near Flimby, between Workington and Maryport, Cumberland, "opposite the first gate after the road has turned from the valley of the Derwent to follow the coast towards Maryport;" also "apparently wild" near Penzance and St. Austle, Cornwall: but both this and *G. nodosum* are plants almost peculiar to a southern clime, and cannot be expected to be indigenous to us.

4. G. *sylváticum* L. (*Wood C.*); pedicels of fruit erect, leaves subpeltate with 5 or 7 deep and acute lobes which are cut and serrated, stem erect corymbose, petals obovate slightly notched, their claws bearded, sepals awned, stamens subulate, capsules even hairy, seeds dotted. *E. B.* t. 121.

Woods, thickets, and sides of rivers, chiefly in subalpine countries. ♃. 6, 7.—*Stem* 1—3 ft. high. *Flowers* purple, rather larger than those of *G. phæum*, but much smaller than in the following species. Specimens with smaller and pale rose-coloured flowers sometimes occur.

5. G. *praténse* L. (*blue Meadow C.*); pedicels of fruit deflexed, leaves 5-partite, lobes multipartite all the segments acute, petals obovate slightly notched their claws ciliated (not bearded), stamens dilated at the base, capsules even hairy, seeds minutely reticulated. *E. B.* t. 404.

Pastures and moist thickets, particularly near cascades in mountainous countries. About London. ♃. 6—9.—*Stem* 1—2 ft. high. Readily distinguished by its large purple *flowers* and multipartite *leaves*. The hairs on the fruit, in this and the last, are spreading and glandular.

6. G. *Pyrenáicum* L. (*Mountain C.*); leaves reniform 5—7-lobed, lobes oblong obtuse trifid and toothed at the extremity, stem erect branched softly hairy, petals with a deep notch twice as long as the mucronate sepals, capsules keeled even slightly downy, seeds without dots. *E. B.* t. 405.

Meadows and pastures in many places, but not frequent. ♃. 6, 7.—*Stem* 2—3 ft. high, much branched. Claws of *petals* densely bearded. Distinguished by the very obtuse segments of its lower *leaves* (for the upper ones are acute and less divided), and its rather small, numerous, purple *flowers*, with cleft *petals*. The *root* of this is fusiform; in all the former it consists of long fibres arising from a præmorse, oblique tap root.

**** Peduncles 2-flowered. Root annual.*

7. G. *lúcidum* L. (*shining C.*); leaves roundish 5-lobed, lobes trifid and notched obtuse with a short mucro, calyx pyramidal angular dentato-tuberculate, claw of petals glabrous, capsules transversely wrinkled, seeds without dots. *E. B.* t. 75.

Rocks, walls, and roofs of houses, especially hilly and mountainous countries. ☉. 5—8.—*Stems* spreading, shining (as are the *leaves*),

brittle, swelling at the joints. *Leaves* small, lower ones reniform, often of a fine red. *Flowers* small, rose-coloured.

8. G. *Robertiánum* L. (*stinking C.* or *Herb-Robert*); leaves 2 with 3 or 5 deep lanceolate inciso-pinnatifid acuminate segments, calyx angular hairy, claw of petals glabrous, capsules transversely wrinkled, seeds without dots. *E. B.* t. 1486.

Woods, thickets, stony and waste ground, frequent. A small *var.* is common by the sea-side, the β of *Smith:* it is the *G. purpureum* of Mill. and of Forster in *E. B. S.* t. 2648, *G. Raii*, Lindl. Syn. p. 57. ☉. 5—9.— *Stems* spreading, red, brittle. Flowers purple, sometimes white.

9. G. *mólle* L. (*Dove's-foot C.*); leaves rounded or reniform lobed and cut downy, their segments obtuse, petals notched scarcely longer than the calyx, their claws bearded, capsules transversely wrinkled, seeds without dots. *E. B.* t. 778.

Dry pastures and waste places, common. ☉. 4—8.— *Stems* spreading, procumbent, with long hairs. *Leaves* lobed; *lobes* broad, cut. *Flowers* small, purple. *Seeds* smooth.

10. G. *pusíllum* L. (*small-flowered C.*); petals notched, anther-bearing stamens 5, leaves rounded or reniform palmate with 5—7 deep trifid lobes, capsules smooth carinate downy with erect appressed hairs, seeds without dots. *E. B.* t. 385.

Waste ground and in gravelly soils, frequent, less common in Scotland. About Edinb. and Glasgow. ☉. 6—9.— *Stem* weak, pro trate. *Leaves* deeply lobed. *Flowers* very small, bluish-purple.

11. G. *rotundifólium* L. (*round-leaved C.*); leaves roundish or reniform palmately lobed and cut downy, petals entire the length of the calyx, capsules even hairy, seeds dotted. *E. B.* t. 157.

Pastures and waste ground, but not common. ☉. 6, 7.— Distinguished from the last two by the entire *petals*, and dotted *seeds* and from the first of them likewise by the smooth or even *capsules*.

12. G. *disséctum* L. (*jagged-leaved C.*); petals notched rather shorter than the much-awned calyx, leaves 5-partite, lobes linear trifid or cut, capsules even hairy, seeds dotted. *E. B.* t. 753.

Hedges and pastures, gravelly and waste places. ☉. 5—8.— *Stems* spreading. Characterised by the much-divided *leaves* and the short *foot-stalks* of the blossoms, which, as Curtis observes, thus appear as if sitting among the leaves.

13. G. *columbínum* L. (*long-stalked C.*); peduncles longer than the leaves which are 5-partite, the lobes divided into many acute segments, petals entire as long as the much-awned angular calyx, capsules even glabrous, seeds dotted. *E. B.* t. 259.

Dry pastures in several parts of Great Britain, in a gravelly or

limestone soil. ☉. 6, 7. — *Stem* very slender, procumbent, its hairs as in *G. dissectum*, reflexed. *Capsules* quite glabrous, or sometimes with a few minute scattered hairs.

2. Erodium *L'Hérit.* Stork's-Bill.

Pet. regular. *Stam.* 10, slightly monadelphous at the base; 5 opposite the petals, sterile; the other 5 alternating with a *gland* at their base. *Caps.* each with a long spiral *awn*, bearded on the inside. — Name: ερωδιος, a *heron;* the fruit resembling the beak of that bird.

1. E. *cicutárium* Sm. (*Hemlock S.*); peduncles many-flowered, leaves pinnate, leaflets sessile pinnatifid and cut, stipules lanceolate, petals longer than the calyx, stems prostrate hairy. *E. B.* t. 1768.

Waste ground, frequent. ☉. 6—9. — Whole plant hairy. *Flowers* in small *umbels*, purplish sometimes white. Perfect *stamens* glabrous, dilated, but not toothed at the base. Beak of *fruit* hairy or glabrous.

2. E. *moschátum* Sm. (*musky S.*); peduncles many-flowered, leaves pinnate, leaflets nearly sessile ovate unequally cut, stipules ovate, perfect stamens toothed at the base, stems depressed hairy. *E. B.* t. 902.

Waste places, rare. Frequent in Guernsey and Jersey. In the Craven of Yorkshire, and in Westmoreland. Near Bristol; Shotover Hill, Oxford, and on Ampthill warren, Bedfordshire. Near Plymouth. Simmond's Court, Carlingford Castle, and Monkton Church; Ireland. Bank near Countess Wear Bridge, on the Exe, Devon. Near Gresford. ☉. 6, 7. — Larger than the last, and with much less deeply cut *leaflets*, which yield a powerful smell of musk.

3. E. *marítimum* Sm. (*Sea S.*); peduncles 1—2-flowered, petals very minute or wanting, leaves simple ovato-cordate stalked lobed and crenate, stems depressed slightly hairy. *E. B.* t. 646.

Sandy and gravelly sea-coasts, but rare; as in Sussex, Wales, Cornwall, and Isle of Wight. Steep-Holmes, and near Bristol, far from the Sea. Glenluce, Galloway. Hill of Howth, Ireland. ♃. 5—9.

Ord. XXI. BALSAMINACEÆ *Rich.*

Flowers very irregular. *Sepals* 5, or 4 by the union of the two inner or upper ones, lowest cucullate with a spur. *Petals* 5, or apparently 2 by the want of the uppermost and the cohesion in pairs of the two lateral ones. *Stamens* 5; *filaments* more or less united at the extremity; *anthers* 2-celled. *Ovary* of 5 cells alternating with the stamens. *Stigmas* 5, almost

sessile, distinct or united. *Fruit* a *capsule* bursting with 5 elastic valves, or succulent and indehiscent. *Seeds* solitary or numerous, suspended. *Albumen* 0. *Embryo* straight with *radicle* superior. — Herbaceous *and succulent* plants, *without* stipules.

1. Impátiens *Linn.* Balsam.

Flowers of apparently 4 *sepals* and 2 *petals*. *Capsule* of 5 elastic valves. — Name (*impatient*) from the sudden opening of the valves of the capsule, when the fruit is touched.

1. I. **Noli-me-tángere* L. (*yellow B.* or *Touch-me-not*); joints of the stem swelling, leaves ovate serrate petiolate, peduncles solitary many-flowered, spur of calyx loosely recurved and entire at the point. *E. B.* t. 937.

Moist shady woods in Yorkshire, Westmoreland, Lancashire, and some other counties in England and Wales; also at Castlemilk near Glasgow; — but perhaps only escaped from cultivation or planted. ☉. 7—9. — *Stem* generally 1 ft. high, rounded, succulent, fragile, *Flowers* large, yellow, spotted with orange. *Capsule* bursting elastically and scattering its *seeds* with considerable force; the valves are then spirally twisted.

[*I. fulva* Nutt of N. America grows on the banks of the Wey, the Basingstoke Canal, and the Thames, from Guildford and Woking Heath to Chiswick. The spur of the calyx is notched at the point, and so closely reflexed as to be pressed against the sepals. *E. B. S.* t. 2794.]

Ord. XXII. OXALIDACEÆ *De Cand.*

Flowers regular. *Sepals* 5, persistent. *Petals* 5, equal, often cohering at the base and twisted in æstivation. *Stamens* 10, the 5 inner ones opposite the petals and longer than the others; *anthers* distinct, 2-celled. *Ovary* 1, 5-celled. *Styles* 5. *Stigmas* usually capitate or somewhat bifid. *Fruit* a *capsule* with 5 or 10 valves, or indehiscent. *Seeds* attached to the axis, usually with an elastic fleshy outer integument, which, on bursting open, projects the seed to a distance. *Embryo* in a cartilaginous *albumen*, with its *radicle* towards the *hilum*. — *Mostly* herbs, *with compound acid* leaves; some of them highly sensitive. — *Oxalis Acetosella* abounds in oxalic acid. *O. crenata* of Peru affords a salad in its leaves, and its tubers are eaten as potatoes, but they are not worth a place in a European kitchen-garden.

1. O'xalis *Linn.* Wood-Sorrel.

Cal. not bracteated at the base. *Filaments* slightly combined

below. *Caps.* angular, 5-celled. *Seeds* with an elastic integument. — Named from *ὀξυς*, *sharp* or *acid.*

1. O. *Acetosélla* L. (*common W.*); leaves all radical ternate, leaflets inversely heart-shaped hairy, scape single-flowered, root scaly. *E. B.* t. 762.

Woods and shady places, frequent; also at a great elevation on the mountains, among shady rocks. ☉. 5, and on the mountains till 8. — *Leaf-stalks* long and slender, reddish. *Leaflets* drooping at night. *Scape* with two scaly *bracteas*. *Flowers* handsome, drooping, white, with purplish veins. The *leaves* have a most agreeable acid flavour. — This appears to be the original *Seamrog* or *Shamrock* of Ireland; although the name has long been applied to the much less beautiful *Trifolium repens* or Dutch Clover, both in the Irish and Gaelic languages.

2. O. *corniculáta* L. (*yellow procumbent W.*); stem branched, branches procumbent, peduncles mostly 2-flowered shorter than the ternate leaves, stipules united to the base of the petioles. *E. B.* t. 1726.

Shady waste ground, chiefly in the extreme south of England. Devonshire. ☉. 6—9.

(O. *stricta* L. is stated to be naturalized in *gardens* near Penzance; at Ilsington, Devon; in fields near Northam, North Devon; and in an Orchard at Cuckfield, Sussex. This latter station is generally given for *O. corniculata*, from which *O. stricta* differs by having a more upright, less branched *stem*, more numerous and often whorled leaves, with longer *flower-stalks* and several *flowers* in an *umbel*, and no evident *stipules* at the base of the *petioles*.)

Ord. XXIII. STAPHYLEACEÆ *Lindl.*

Sepals 5, connected at the base, imbricated in æstivation. *Petals* 5, alternate with the sepals, inserted into or under the margin of a free crenate concave hypogynous disk, imbricated in æstivation. *Stamens* 5, opposite the sepals, inserted into the margin of the disk. *Ovary* free, of 2—3 carpels distinct or more or less cohering. *Styles* 2—3 distinct or combined. *Fruit* membranous, chartaceous, or fleshy. *Seeds* globose, bony, with a large truncate *hilum*, little or no *albumen*, thick *cotyledons* and short *radicle*. — Shrubs. Leaves *usually opposite*, *pinnate*, *with common and partial deciduous* stipules. Flowers *in terminal stalked* racemes.

1. Staphyléa *Linn.* Bladder-Nut.

Cal. coloured. *Pet.* erect during flowering. *Carpels* united more or less at the base. *Caps.* membranaceous, bladdered. — Name from *σταφυλη*, *a bunch of grapes*, its flowers being in racemes.

1. S. **pinnáta* L. (*common B.*); leaves pinnate, petioles without glands, styles 2. *E. B.* t. 1560.

Thickets and hedges. Yorkshire; about Ashford, Kent. ♄. 6. — A plant of Eastern Europe, without any title to be received into the British Flora, except that of custom.

Sub-Class II. CALYCIFLORÆ. (Ord. XXIV.—XLIX.)

Corolla (and usually the stamens) perigynous or inserted upon the calyx. Ovary either free or adnate with the tube of the calyx.

Conspectus of the Orders.

A. *Corolla polypetalous.*

a. *Corolla papilionaceous.*

26. Leguminosæ.

b. *Corolla regular; stamens* 20 *or more.*

27. Rosaceæ. Leaves with stipules.

c. *Corolla regular or nearly so; stamens fewer than* 20.

* *Carpels* 2 *or more; distinct or nearly so* (*apocarpous*).

[23. Staphyleaceæ. Calyx with a large free disk at its base, inside.]
27. Rosaceæ. Leaves with stipules. Conspicuous free disk none.
35. Crassulaceæ. Leaves without stipules. Disk none.

** *Carpels united into a solitary* 1*-celled ovary.*

33. Portulaceæ. Sepals 2. Ovary superior. Placenta central. Leaves without stipules.
[14. Caryophyllaceæ, § Alsineæ. Sepals 4—5. Ovary superior. Placenta central. Leaves without stipules.
34. Paronychiaceæ. Sepals 5. Ovary superior. Placenta central or ovule solitary. Leaves with stipules.
[10. Droseraceæ, § Parnassieæ. Sepals 5. Ovary superior. Placentas 4, parietal. Ovules numerous, not comose. Stigmas 4, sessile, simple.]
31. Tamaricaceæ. Ovary superior. Placentas 3, parietal. Ovules numerous, comose. Stigmas 3, sessile, plumose.
36. Grossulariaceæ. Stamens alternate with the petals. Ovary inferior. Ovules several.
41. Loranthaceæ. Stamens opposite to and upon the petals. Ovary inferior. Ovule solitary.

*** *Carpels united into a solitary* 2- (*or many-*) *celled ovary.*

[52. Monotropaceæ. Sepals distinct; imbricated in æstivation. Stamens twice as many as the petals, almost hypogynous. Style 1. Ovary superior. Green leaves wanting.
51. Pyrolaceæ. Calyx deeply divided; imbricated in æstivation. Stamens twice as many as the petals, nearly hypogynous. Style 1. Ovary superior. Leaves green, without stipules.]
30. Lythraceæ. Calyx of one piece with teeth; valvate in æstivation. Stamens inserted on the mouth of the calyx, alternate with the petals when as few. Style 1. Ovary superior.

37. SAXIFRAGACEÆ. Calyx deeply divided or spreading; imbricated in æstivation. Stamens twice as many as the petals. Styles 2 or more. Fruit superior or only partly so. Seeds numerous in each cell.
25. RHAMNACEÆ. Calyx valvate in æstivation. Stamens as many as and opposite to the minute petals. Fruit superior or partly so.
24. CELASTRACEÆ. Calyx spreading; calyx and petals imbricated in æstivation. Stamens as many as the petals and alternating with them. Disk large, expanded, flat, closely surrounding the ovary, and covering the flat bottom of the calyx. Fruit superior or partly so, dehiscing, seeds never bony. Leaves simple.
[23. STAPHYLEACEÆ. Calyx deeply divided, erect; calyx and petals imbricated in æstivation. Stamens as many as the petals and alternating with them. Disk large, free. Ovary quite free. Fruit superior. Seeds bony. Leaves pinnate.
28. ONAGRACEÆ. Calyx-segments valvate; petals convolute in æstivation. Style 1. Ovary inferior.
29. HALORAGACEÆ. Monœcious. Sepals 4. Stamens 8. Styles 4. Fruit inferior, splitting into 4 indehiscent 1-seeded achenes. Leaves opposite or verticillate.
38. UMBELLIFERÆ. Petals 5, imbricated in æstivation. Stamens 5, alternating with the petals. Styles 2. Fruit inferior, splitting into 2 indehiscent 1-seeded carpels. Leaves alternate.
39. ARALIACEÆ. Petals valvate in æstivation. Styles several, distinct or combined. Fruit inferior, baccate; cells each 1-seeded. Leaves alternate.
40. CORNACEÆ. Petals 4, valvate in æstivation. Stamens 4, alternating with the petals. Style 1. Ovary inferior. Leaves opposite.

B. *Corolla monopetalous.*

* *Ovary inferior or partly superior, with one perfect cell.*

† *Ovules several in each cell.*

[66. PRIMULACEÆ. Flowers perfect. Placenta central, free. Erect plants.]
32. CUCURBITACEÆ. Flowers imperfect. Placentas parietal. Plants with tendrils.

†† *Ovules solitary in each cell.*

46. COMPOSITÆ. Flowers upon a receptacle, within a common involucre. Anthers of the perfect flowers united. Ovule erect. Albumen wanting.
45. DIPSACACEÆ. Flowers perfect, upon a receptacle, within a common involucre. Anthers and filaments distinct. Ovule pendulous. Albumen fleshy. Leaves opposite.
44. VALERIANACEÆ. Flowers cymose, without an involucre. Anthers and filaments of perfect flowers distinct. Style filiform; stigma trifid. Ovule pendulous. Albumen wanting. Leaves opposite.
42. CAPRIFOLIACEÆ. Flowers cymose. Anthers and filaments distinct. Stigmas 3 sessile. Ovule pendulous. Albumen fleshy. Leaves opposite.

** *Ovary inferior or only partly inferior, with 2 or more perfect cells.*

39. ARALIACEÆ. Styles 4—5. Leaves alternate.

42. CAPRIFOLIACEÆ. Stamens inserted upon the corolla. Style 1, or none and stigmas 3 sessile. Leaves opposite without interpetiolar stipules.
43. RUBIACEÆ. Stamens inserted upon the corolla. Styles 1 or 2. Leaves opposite with interpetiolar stipules, or leaves verticillate.
48. LOBELIACEÆ. Stamens free from the corolla; anthers opening longitudinally, as many as the lobes of the corolla, united, dissimilar. Style 1, fringed below the stigma.
47. CAMPANULACEÆ. Stamens free from the corolla; anthers opening longitudinally, as many as the lobes of the corolla, similar. Style 1, not fringed below the stigma.
49. VACCINIACEÆ. Stamens free from the corolla and twice as many as its lobes; anthers opening by pores.

*** *Ovary entirely superior. Stamens free from the corolla.*

35. CRASSULACEÆ. Carpels and styles several, distinct.
[50. ERICACEÆ. Style 1, with an hypogynous disk. Seed-coat close to the nucleus.
51. PYROLACEÆ. Style 1, without an hypogynous disk. Seed-coat chaffy.]

A. *COROLLA POLYPETALOUS.* (ORD. XXIV.—XLI.)

ORD. XXIV. CELASTRACEÆ *R. Brown.*

Calyx 4—5-cleft, its base covered with a large, flat, fleshy disk, imbricated in æstivation. *Petals* 4—5, alternate with the sepals arising from the edge of the disk. *Stamens* 4—5 alternate with the petals. *Ovary* wholly or in part immersed in the disk, 2—5-celled. *Cells* with one or many seeds. *Fruit* a *capsule* with 3—5 cells, and 3—5 septiferous valves, or a dry *drupe* with 1 or 2 cells. *Seeds* erect, often with an arillodium, never bony. *Albumen* copious, fleshy, with a straight *embryo*, flat *cotyledons*, and an inferior *radicle*.—Shrubs, *with simple, mostly opposite* leaves, *and axillary* cymes.

1. EUÓNYMUS *Linn.* Spindle-Tree.

Cal. flat, 4—5-cleft, having a peltate disk within. *Pet.* 4—5. *Stam.* alternating with the petals, inserted upon the disk. *Caps.* with 3—5 angles, and as many cells and valves. *Seeds* with a coloured fleshy *arillodium*.—Named from *Euonyme*, mother to the Furies, in allusion to the injurious effects produced by the fruit of these plants.

1. E. *Europæ'us* L. (*common S.*); flowers mostly tetrandrous, petals oblong, branches 4-angled glabrous, leaves ovato-lanceolate, minutely serrate. *E. B.* t. 362.

Woods and hedges; frequent in England, and the south of Ireland, scarcely wild in Scotland. ♄. 5, 6.— *Shrub* 3—5 ft. high. *Bark* green, smooth. *Leaves* glabrous. *Pedancle* bearing a few-flowered *umbel*. *Flowers* small, white. *Fruit* obtusely angular, very beautiful

rose-coloured. *Arillodium* orange-coloured. The *berries* and even *leaves* are said to be dangerous, and the whole plant is fetid. Of its tough white wood skewers and spindles are made, and Linnæus tell us it affords the best charcoal for drawing.

Ord. XXV. RHAMNACEÆ *Juss.*

Calyx 4—5-cleft, valvate in æstivation. *Petals* 4—5, inserted on the summit of the tube of the calyx, shorter than and alternate with its lobes, sometimes wanting. *Stamens* 4—5, alternate with the calycine lobes. *Ovary* inferior, wholly or in part superior, 2—4-celled; *cells* with one erect ovule. *Fruit* fleshy and indehiscent, or dry and dehiscent. *Seeds* erect. *Albumen* fleshy, rarely wanting. *Embryo* straight; *cotyledons* large and flat; *radicle* inferior. — Shrubs *or small* Trees, *with simple usually alternate* leaves, *minute* stipules, *and small greenish* flowers. Fruit of some purgative, as our *Ramnus catharticus*; in others the fruit yields a dye, as *R. infectorius*, &c. *Zizyphus Lotus* is supposed to be one kind of *Lotus* of the ancients. *Jujubes* are the produce of the fruit of *Z. vulgaris*.

1. Rhámnus *Linn.* Buckthorn.

Cal. urceolate, 4—5-cleft. *Pet.* nearly flat and notched, often wanting. *Stamens* with ovate, 2-celled *anthers*. *Disk* thin, covering the tube of the calyx. *Ovary* superior, 3—4-celled. *Berry* with 2—4 cartilaginous nuts, each 1-seeded.— Name, ῥαμνος, in Greek, a *branch*; from its numerous branches.

1. R. *cathárticus* L. (*common B.*); spines terminal, flowers 4-cleft diœcious, leaves ovate sharply serrate. *E. B.* t. 1629.

Woods, hedges, and thickets, not unfrequent in England. About Dumfries, Scotland. Near Cork and Lough Erne, in Ireland. ♄. 5—7.— A spreading *shrub*. *Leaves* with 4 or 6 strong lateral nerves parallel with the margin or rib; *serratures* glandular. *Flowers* in dense fascicles. In the *barren* flower the *petals* are oblong-ovate, in the *fertile* one they are linear, incurved above, but not cucullate. *Styles* 4, united half-way up, spreading. *Seeds* with a deep external furrow. *Embryo* bent or slightly folded longitudinally. *Berries* black, nauseous, powerfully cathartic; they afford a *yellow* dye in an unripe state; the bark a *green* dye.

2. R. *Frángula* L. (*Alder B.*); unarmed, flowers 5-cleft perfect, leaves obovate entire. *E. B.* t. 250.

Woods and thickets in England. Near Auchincruive, Ayrshire, ♄. 5, 6. — A small *shrub*. *Flowers* stalked, axillary, 2—3 together, somewhat fascicled, whitish-green. *Petals* very minute. *Style* 1. *Berries* dark purple, purgative. *Seeds* 2, even, compressed. *Embryo* flat.

Ord. XXVI. LEGUMINOSÆ *Juss.*

Calyx of 4—5 *sepals*, more or less combined, the fifth segment inferior. *Petals* various, generally 5 and papilionaceous. *Stamens* various, generally 10, monadelphous or diadelphous. *Ovary* 1-celled, bearing the ovules along the upper margin, sometimes stalked. *Style* and *Stigma* 1. *Legume* 2-valved, dehiscent or indehiscent. *Seeds* usually without *albumen*. *Embryo* with the *radicle* straight or recurved upon the *cotyledons*.—Trees, Herbs, *or* Shrubs. Leaves *alternate*, *mostly compound and pinnate*, *with or without tendrils*, *stipuled*.— They possess very various principles and properties, and many of the plants composing this Order are of the greatest service in the arts, in medicine, and domestic economy. *Indigofera* affords *Indigo*; *Glycyrrhiza*, *Liquorice*; *Astragalus*, *Gum Tragacanth*; *Soja*, *Soy*; *Mucuna*, *Cow-itch* or *cow-age*; *Erythrina*, *Gum-lac*; *Pterocarpus*, *Gum-dragon*, and *Saunders-wood*; *Brya*, *Jamaica Ebony*; *Acacia*, *Gum-Arabic*, and one kind of *India-rubber*; *Dipterix*, the *Tonquin bean*; *Hæmatoxylon*, *Log-wood*; *Cassia* yields *Senna*, and other potent drugs; *Copaifera*, *Balsam of Copaiva*; *Hymenæa*, *Gum Anime*. Their *seeds* yield food for man and various animals, their herbage for cattle.—All the British genera are papilionaceous, with the standard superior and a vexillary æstivation, and have 10 stamens, monadelphous or diadelphous (9 and 1, the solitary stamen being superior).

I. *Stamens monadelphous.* Genisteæ.

1. Ulex. Calyx nearly as long as the cor., bibracteolate, 2-partite; upper segment slightly 2-toothed, lower 3-toothed. Keel blunt. Legume turgid. Leaves simple.
2. Genista. Calyx much shorter than the cor. 3-cleft, two upper segments entire, lower one 3-toothed. Keel blunt. Leaves simple or trifoliolate.
3. Sarothamnus. Calyx much shorter than the cor., ebracteolate, 2-lipped, upper lip 2-toothed, lower 3-toothed. Keel blunt. Legume flat. Leaves simple or trifoliolate.
4. Ononis. Calyx much shorter than the cor., nearly equally 5-cleft. Keel rostrate. Leaves simple or trifoliolate.
5. Anthyllis. Calyx oblique at the mouth with 5 nearly equal teeth, Keel without a beak. Leaves pinnate.

II. *Stamens diadelphous. Leaves* 3—5-*foliolate.* Trifolieæ.

6. Medicago. Legume falcate or spirally twisted. Keel of cor. obtuse. Calyx-teeth nearly equal.
7. Melilotus. Legume nearly straight. Keel obtuse. Calyx-teeth nearly equal. Flowers in long racemes.
8. Trigonella. Legume straight or slightly curved, many-seeded, much longer than the calyx. Petals distinct. Keel obtuse. Flowers capitate or in short racemes.
9. Trifolium. Legume and ovary nearly straight, 1—4-seeded, scarcely

longer than the calyx. Petals cohering by their claws. Keel obtuse. Calyx-teeth unequal. Flowers capitate or in short racemes.

10. LOTUS. Legume nearly straight. Keel rostrate.

III. *Stamens diadelphous. Leaves pinnate. Tendrils* 0. *Legume dehiscent, several-seeded, imperfectly* 2*-celled by the introflexion of one of the sutures.* ASTRAGALEÆ.

11. OXYTROPIS. Keel acuminated. Legume with the upper or seed-bearing suture inflexed.

12. ASTRAGALUS. Keel obtuse. Legume with the lower suture inflexed.

IV. *Stamens diadelphous. Leaves pinnate. Tendrils* 0. *Legume indehiscent, divided transversely into one or more* 1*-seeded cells.* HEDYSAREÆ.

13. ORNITHOPUS. Flowers umbellate, bracteate. Keel small obtuse. Legume compressed, contracted on both sides at the joints.

14. ARTHROLOBIUM. Flowers umbellate, without bracteas. Keel small, obtuse. Legume terete, scarcely contracted at the joints.

15. HIPPOCREPIS. Flowers umbellate. Keel acuminate. Legume straight on one side, much contracted on the other at the joints.

16. ONOBRYCHIS. Flowers racemose. Legume of a single 1-seeded joint.

V. *Stamens diadelphous. Leaves pinnate or apparently simple, usually with tendrils. Legume* 2*-valved, several-seeded, the suture not introflexed.* VICIEÆ.

17. VICIA. Style filiform or angular, equally hairy all round below the point, or mostly so on the under-side.

18. LATHYRUS. Style dilated upwards, flat, pubescent only on the upper side below the apex. Leaves with tendrils or apparently simple.

19. OROBUS. Style flat or dilated upwards, pubescent only on the upper side. Leaves pinnate without tendrils.

Tribe I. GENISTEÆ. *Legume* 1*-celled. Stamens mostly monadelphous. Leaves simple or trifoliolate, rarely pinnate. Stems generally shrubby.* (Gen. 1—5.)

1. U'LEX *Linn.* Furze.

Cal. 2-partite, with a small scale or *bractea* on each side at the base; segments nearly entire or upper one 2-toothed, lower 3-toothed. *Standard* bifid, scarcely longer than the cal. *Keel* erect, blunt. *Legume* turgid, few-seeded, scarcely longer than the calyx.—Leaves *simple*.—Name from the Celtic *uile*, *all;* and also, according to Théis, from *ec* or *ac*, a *sharp point;* whence, too, arises the French name *ajonc* or *acjonc*, a *sharp* or *spiny rush*.

1. U. *Europæ'us* L. (*common F., Whin*, or *Gorse*); calyx somewhat hirsute with slightly spreading hairs the teeth nearly obsolete, bracteas large ovate lax, wings manifestly longer than the keel and imbricated over it.—*α.* much branched and spreading, spines usually rigid. *E. B.* t. 742.—*β. strictus*, branches upright, compact, spines soft. U. strictus *Mackay*.

Healthy places, especially in sandy or gravelly soils; rare in the Scottish Highlands. ♄. 2—7.— *Shrub* 3—4 or more ft. high, with innumerable green striate *branches*, clothed with acute branching *spines*, and having at their base a few *leaves* which are lanceolate, a little hairy, very minute. *Cal.* coarsely pubescent. *Cor.* bright yellow; *wings* straight incurved. *Legumes* opening elastically, and shedding their seeds the same year they come to maturity. *Var.* β. was discovered in Lord Londonderry's park, county of Down, by *Mr. J. White;* it is readily propagated by cuttings, and now well known in our gardens and nurseries under the name of *Irish Furze.* It bears few flowers, but may be at all times distinguished from the *var.* α. by its smaller size, its dense and compact, rather formal mode of growth and its very upright branches, which are so soft and succulent that sheep and cattle are extremely fond of them.

2. U. *nánus* Forst. (*dwarf F.*); calyx with the pubescence appressed the teeth lanceolate, bracteas minute, wings about the length of the keel. *E. B.* t. 743.

Dry heaths, in many parts of England and Ireland. Near Ardrossan and Dumfries, and in Galloway; Scotland. Orkney. ♄. 7—11.— Smaller than the last in all its parts. The essential character consists in the more minute, rounded, close-pressed, and often hardly discernible *bracteas*, the *calyx* merely pubescent with more distinct teeth, shorter *wings* and the *legume* indehiscent; at least it may be observed remaining on the plant and still closed the year after it has arrived at maturity. Of this there are two forms: the one, which is usually so decumbent at the base as to exhibit only the ends of the branches above the herbage, has the wings flat, straight and shorter than the keel; the other usually erect (*U. Gallii* of Planchon), has the wings falcate and incurved, actually a little longer than the keel, but by their curvation appearing scarcely so long in the recent flower, consequently not folded over each other as in the last species; but there seem to be several intermediate states.

2. Genísta *Linn.* Green-weed.

Cal. 2-lipped; upper lip with 2 deep entire segments lower one with 3 teeth. *Standard* oblong, entire. *Keel* deflexed after flowering, blunt. *Legume* flat or turgid, many-seeded.—Leaves *simple* or *trifoliolate.*— Named from *Gen,* said by Théis to mean a *shrub* in Celtic.

1. G. *tinctória* L. (*Dyer's G.*); unarmed, leaves lanceolate or elliptical nearly glabrous, stipules minute subulate, branches terete striate, flowers spicato-racemose, corolla and legumes glabrous.— α. branches erect. *E. B.* t. 44.—β. stem and branches prostrate.

Pastures, thickets, and borders of fields; frequent in England, rare in Scotland and Ireland. — β. Heaths and rocks near Kynance Cove, Cornwall. ♄. 7, 8. — *Stem* 1—2 ft. high. *Leaves* rather distant, hairy at the edges. *Flowers* pale yellow, almost sessile, with a small

floral leaf or *bractea* at the base. Employed to dye yarn of a yellow colour.

2. G. *pilósa* L. (*hairy G.*); unarmed, procumbent, leaves obovato-lanceolate complicate silky beneath, stipules ovate obtuse, flowers axillary on short pedicels, standard keel and legumes downy. *E. B.* t. 208.

Dry sandy or gravelly heaths, rare. About Bury, Suffolk; in the forest, by the road from Maresfield to Groombridge, Sussex; between Little Malvern and Malvern Wells, Worcestershire; near the Lizard and St. Agnes' Head, Cornwall. ♄. 5—9. — A small, much-branched tortuose, woody-stemmed *plant*. *Flowers* small, bright yellow.

3. G. *A'nglica* (*Needle G.*, or *Petty-Whin*); spinous, spines simple none on the flowering branches, leaves ovato-lanceolate glabrous, stipules obsolete, flowers axillary somewhat racemed, corolla and legumes glabrous. *E. B.* t. 132.

Moist heaths and moory ground, frequent. ♃. 5, 6. — *Stems* ascending, very spinous. *Leaves* very small. *Flowers* yellow, solitary in the axils of the leaf-like bracteas.

3. Sarothámnus *Wimm.* Broom.

Cal. 2-lipped, without bracteas at its base; upper lip with 2 small teeth, lower one 3-toothed. *Standard* large, broadly ovate. *Keel* very blunt, including the stamens, at length deflexed. Tube of the *stamens* split on the upper side. *Style* very long, thickened upwards and spirally curved. *Legume* many-seeded, much longer than the calyx.— Leaves *simple or trifoliolate.*— Named from σαρω, to *sweep*, θαμνος, a *shrub*.

1. S. *scopárius* Wimm. (*common B.*); branches angled glabrous, leaves ternate stalked, upper ones simple, leaflets oblong, flowers axillary shortly pedicellate, legumes hairy at the margin. Spartium *L.*: *E. B.* t. 1339. Cytisus *DC.*

Dry hills and bushy places, frequent. ♄. 4—6. — *Stem* 3—6 ft. or more high. *Branches* long, straight, green. *Flowers* large, bright yellow. — The young green tops are said to be powerfully purgative and diuretic, and they are very bitter. What is called *Irish Broom* is *S. patens*, a native of Spain and Portugal.

4. Onónis *Linn.* Rest-harrow.

Cal. campanulate, 5-cleft, its segments linear. *Standard* large, striate. *Keel* rostrate. *Legume* turgid, sessile, few-seeded.— Leaves *simple* or *trifoliolate.*— Named from ονος, an *ass*; because the plant is eaten by that animal.

1. O. *arvénsis* L. (*common R.*); shrubby, branches hairy often spinous, lower leaves ternate, the rest simple oblong or oval serrate except at the base, flowers solitary shortly stalked, calyx much shorter than the corolla, legume erect obliquely

rhomboid 2—3-seeded, seeds tuberculated.— *α.* procumbent, branches uniformly hairy, calyx longer than the legume and usually shorter than the floral leaves. *E. B. S.* t. 2659.— *β.* erect or ascending, more glabrous, branches with the hairs usually arranged in two rows, calyx rather shorter than the legume and usually longer than the floral leaves. *E. B.* t. 682. O. campestris *Koch.* O. antiquorum *L?*

Barren pastures and borders of fields. ♃. 6—9. — A very variable plant, erect or procumbent and rooting, more or less spinous; *leaves* ovate or cuneate: *stipules* adhering to the petioles; *flowers* rose-coloured, sometimes white. The *var. β.* is usually more spinous, and with smaller flowers and upper leaves; but it has so much the habit of *α.*, and so many of its characters, that we do not perceive any advantage in separating them, particularly as we have seen forms between the two.

2. O. *reclináta* L. (*small spreading R.*); herbaceous spreading viscid and hairy, leaves all ternate, stipules broadly ovate, peduncles 1-flowered, calyx about as long as the corolla, shorter than the closely reflexed cylindrical legumes, seeds 14—16 warted. *E. B. S.* t. 2838.

Steep bank, close by the sea, about three miles north-west from the Mull of Galloway. Alderney, one of the Channel Islands. ☉. 6, 7. — This little species is principally found in the South of Europe, and could scarcely have found its way to the first of these localities except along with ballast.

5. Anthýllis *Linn.* Kidney-vetch.

Cal. inflated, mouth oblique and 5-toothed. *Pet.* nearly equal in length, erect. *Keel* obtuse or shortly pointed. *Legume* oval, 1—3-seeded, enclosed in the permanent calyx.— *Leaves* usually pinnate.— Name: *ανθος*, a *flower*, and *ουλος*, a *beard* or *down*, from the downy calyces.

1. A. *Vulnerária* L. (*common K.*, or *Lady's Fingers*); herbaceous, leaves pinnate, leaflets unequal, heads of flowers in pairs. *E. B.* t. 104.

Dry pastures, frequent. With red and sometimes white or cream-coloured flowers, in Devonshire, Wales and South of Ireland, mostly by the sea. ♃. 6—8. — *Stem* ascending. *Leaflets* 5—9, lanceolate, entire, hairy, terminal one the largest. *Flowers* in crowded *heads*; *bracteas* large, digitate or palmated; *calyx* hairy, the teeth ovate, pointed.

Tribe II. Trifolieæ. *Legume 1-celled. Stamens diadelphous. Stems herbaceous, rarely shrubby. Leaves 3—5-foliolate.* (Gen. 6—10.)

6. Medicágo *Linn.* Medick.

Cal. with 5 nearly equal teeth. *Keel* obtuse. *Legume* falcate

or spirally twisted.— Leaves *trifoliolate.*— Name; the μηδικη of the Greeks, so called because it was introduced into Greece by the Medes.

1. M. **falcáta* L. (*yellow Sickle M.*); stem decumbent slightly hairy, leaflets obovate-oblong toothed, peduncles racemed, racemes many-flowered subcorymbose, pedicels usually longer than the bracteas, legume compressed downy falcate or with one spire. *E. B.* t. 1016. M. sylvestris *Fries*, *Bab.*

Dry gravelly banks and old walls, chiefly in Norfolk, Suffolk, and Cambridgeshire; rare. ♃. 6, 7. — *Flowers* usually yellow, sometimes violet. Mr. Babington distinguishes his *M. sylvestris* by the legume "of one flat turn annular," while in *M. falcata* it is said to be "straightly sickle-shaped not annular."

2. M. **satíva* L. (*purple M.*, or *Lucerne*); stem usually erect, leaflets obovate-oblong toothed, peduncles many-flowered racemed, pedicels usually shorter than the bracteas, legumes compressed downy twisted 2—3 times in a loose spire. *E. B.* t. 1749.

Hedges, pastures, and borders of fields, not wild. ♃. 6, 7. — This has purple, or sometimes yellow *flowers*, and a spirally twisted *pod*, and bears a great resemblance to the preceding, of which it has been suspected to be only a cultivated state. In habit they both vary much, but still differ remarkably from all the following.

3. M. *lupulína* L. (*black M.*, or *Nonsuch*); leaflets obovate-cuneate, stipules nearly entire, peduncles many-flowered, spikes dense oval, legumes compressed unarmed kidney-shaped. *E. B.* t. 971.

Abundant in waste and cultivated grounds. ☉. 5—8. — A valuable plant in agriculture, very similar in habit to *Trifolium filiforme*. *Stems* procumbent or ascending. in this and all the following. *Flowers* crowded, small, yellow. *Legumes* small, 1-seeded, rugged with longitudinal prominent veins, of a black colour when ripe.

4. M. *maculáta* Sibth. (*spotted M.*); leaflets obcordate, stipules toothed, peduncles few-flowered, legumes compactly spiral compressed, the spires furrowed at the edge and fringed with a double row of long spreading curved prickles. M. polymorpha *E. B.* t. 1616.

Gravelly pastures in the middle and south of England. Ormeshead, North Wales. ☉. 5—8. — *Leaflets* marked with a purple spot in the centre. *Legume* with only 2—3 spires, the edge thick with 4 ridges and a central furrow.

5. M. *mínima* L. (*little Bur-M.*); leaflets obcordate downy, stipules nearly entire, peduncles few-flowered, legumes compactly spiral subglobose, the spires (about 4) narrow keeled at

the margin with a compact double row of uncinate prickles. *E. B. S.* t. 2635.—*β.* stems and leaves hoary.

Sandy fields and waste places, rare. Narburgh, Norfolk; Newmarket, Cambridgeshire; between Sandwich and Pegwell, Kent; Landguard Fort and elsewhere on the coast of Suffolk. — *β.* Pegwell Bay, Isle of Thanet. ⊙. 5—7. — Ray's plant from Orford, Suffolk, supposed by Smith to be *M. muricata* All., is more probably the present species.

6. M. *denticuláta* Willd. (*reticulated M.*); nearly glabrous, leaflets obcordate, stipules laciniated, peduncles few-flowered, legumes broad loosely spiral and flat with 2—3 spires deeply reticulated the margin thin keeled with a double compact row of prickles.— *α.* prickles subulate often curved or hooked. *E. B. S.* t. 2634.— *β.* prickles minute straight.

First discovered on the coast of Kent, but since found in several of the Eastern and Southern counties of England. ⊙. 4—8. — The legumes are beautifully reticulated, and quite unlike any of the preceding.

7. Melilótus *Tourn.* Melilot.

Cal. 5-toothed; teeth nearly equal. *Pet.* distinct, deciduous. *Keel* obtuse. *Legume* 1- or few-seeded, indehiscent, longer than the cal.—Flowers *in long racemes*. Leaves *trifoliolate*.—Name: *mel*, *honey*, and *Lotus*, the genus so called.

1. M. *officinális* L. (*common yellow M.*); legumes 1—2-seeded ovate compressed pointed irregularly veined and rugose hairy, racemes lax, corolla more than twice as long as the calyx, petals all of nearly equal length, stem erect. Trifolium *Sm.*: *E. B.* t. 1340.

Bushy places and way-sides, not frequent. ♂ or ♃. 6—8. — *Stems* 2—3 ft. high. *Leaves* obovate, serrate *Flowers* yellow, in unilateral pedunculated axillary *racemes*. *Legumes* 3—4 times longer than the calyx, nearly twice as large as in the next species and less prominently wrinkled. — This plant while drying smells like *Anthoxanthum odoratum*.

2. M. **vulgáris* Willd. (*white M.*); legumes 1—2-seeded ovate obtuse mucronate reticulate-rugose glabrous, racemes lax, corolla twice as long as the calyx, keel and wings shorter than the standard, stem erect. M. leucantha *Koch*: *E. B. S.* t. 2689.

In many parts of England and Scotland, but probably introduced with corn or ballast. ♂. 7, 8. — *Flowers* white.

3. M. *arvénsis* Wallr. (*Field M.*); legumes 1—2-seeded ovate obtuse mucronate transversely plicate rugose, racemes lax, corolla twice as long as the calyx, wings and standard equal

longer than the keel, stem branched from the base ascending. *E. B. S.* t. 2960.

Near Thetford and Cambridge. ♂. 7, 8. — *Flowers* yellow in British specimens, but sometimes found white abroad. Easily distinguished when in fruit.

[*M. parviflora* Desf. has been observed in various places about Wandsworth, but is not indigenous: it is easily recognised by its subglobose very obtuse legumes which are distinctly reticulated with wrinkles, and contain only one large globular seed: the racemes are dense when in flower but afterwards elongated and lax.]

8. Trigonélla *Linn.* Fenugreek.

Cal. 5-toothed; teeth nearly equal. *Pet.* distinct: *Keel* obtuse. *Ovary* many-seeded. *Legume* straight or slightly curved, many-seeded, much longer than the calyx, 2-valved. — Flowers *in few or many-flowered heads, or short racemes.* Leaves *trifoliolate.* — Named from τρεις, *three*, and γωνια, an *angle*, on account of the corolla appearing triangular and tripetalous, most of the species having a minute keel.

1. T. *ornithopodioides* DC. (*Bird's-foot F.*); peduncles about 3-flowered, legumes compressed about 8-seeded nearly twice as long as the calyx, leaflets obcordate toothed at the extremity, stems decumbent. Trifolium *L.*: *E. B.* t. 1047.

Dry sandy pastures, mostly near the sea, not very general. ☉. 6, 7. — *Stems* spreading, 2—5 inches long. *Flowers* small. *Wings* considerably shorter than the *standard* and longer than the *keel;* but the latter is longer than the calyx and cannot be called minute in this species: still the distinct petals and long legumes accord better with this genus than with *Trifolium.*

9. Trifólium *Linn.* Trefoil. Clover.

Cal. 5-toothed; teeth unequal. *Wings* united by their claws to the obtuse *keel*, persistent. *Legume* 1—4-seeded, indehiscent, about as long as the calyx by which it is enclosed. — Flowers *capitate.* Leaves *trifoliolate.* — Named in allusion to its 3 leaves or leaflets.

* *Flowers pedicellate (white or reddish), at length deflexed; corolla at length scarious.*

1. T. *répens* L. (*white T.*, or *Dutch C.*); heads umbellate globose, legumes with 4 seeds, calyx-teeth unequal, leaflets obcordate serrulate, stems creeping. *E. B.* t. 1769.

Meadows and pastures, frequent. ♃. 5—9. — *Peduncles* longer than the leaves. Heads of *flowers* white; each flower is on a footstalk which becomes recurved after flowering, and then all the *legumes* are drooping and covered with the withered brown *corollas.* This

trefoil is in great repute for pastures. The *leaflets* have often a dark spot at their base, with a white line bordering it near the middle.

[Allied to this is *T. Vaillantii* Poir. and Sm. in Rees's Cycl., *T. elegans* Savi, which has been met with in clover-fields in Surrey, introduced with seed. It has an ascending stem, short petiole, and 2-seeded legume.]

*** Flowers sessile. Calyx not inflated. Standard deciduous or unaltered. Legumes* 1- *or* 2-*seeded.*

† Calyx with an elevated hairy ring in the throat.

2. T. *ochroleúcum* L. (*Sulphur-coloured T.*); heads stalked terminal solitary, calyx pubescent, the teeth erect in fruit subulate, lower one much longer than the rest, leaflets elliptic or obovate, those of the lower leaves heart-shaped, stem ascending downy. *E. B.* t. 1224.

Pastures and way-sides in England, on gravel or chalk. Frequent also in the clayey soil of Norfolk and Suffolk. ♃. 6—8. — A foot or more high. *Petioles* long. *Stipules* subulate, ribbed. Heads of *flowers* large, at first hemispherical, at length oval, cream-coloured. Throat of the *calyx* with a thickened ring, pubescent within on its upper side. The *corolla* turns brown and is persistent.

3. T. *praténse* L. (*common purple C.*); heads dense ovate sessile, calyx hairy, its teeth setaceous ciliated, lower one longer than the rest ½ longer than the tube of the corolla, stipules ovate bristle-pointed, leaflets oval or obcordate, stems ascending. *E. B.* t. 1770.

Meadows and pastures, frequent. ♃. 5—9. — *Flowers* reddish-purple. Throat of the *calyx* with a thick hairy ring, in this and the next. This is the common *Clover*, so much cultivated for hay. The *leaflets* are oval obovate or obcordate, often marked with a white lunulate spot.

4. T. *médium* L. (*zigzag T.*); heads lax subglobose stalked solitary terminal, calyx glabrous, the teeth setaceous hairy, lower one longer than the rest about equal to the tube of the corolla, stipules lanceolate acuminate, leaflets elliptical, stems branched zigzag. *E. B.* t. 190.

Pastures, frequent. ♃. 6—9. — *Stem* remarkably zigzag. Heads of *flowers* larger than the last, deeper purple. *Leaves* spotless. Inferior in quality to *T. pratense*, but better for pasture on light soils.

5. T. *marítimum* Huds. (*Teasel-headed T.*); heads ovate-globose stalked terminal, teeth of the calyx ciliated rigid at first subulate erect, the lower one much longer and larger than the rest shorter than the claws of the petals, all of them in fruit enlarged and spreading, stipules subulate-lanceolate elongated, leaflets oblong-obovate, stem ascending. *E. B.* t. 220.

Salt-marshes on the east coast of England as far north as Norfolk, and south coast as far as Somersetshire. Newport, Monmouthshire. Near Kilbaric church, Ireland. ⊙. 6, 7.

6. T. * *incarnátum* L. (*crimson C.*); heads ovate at length cylindrical stalked solitary terminal, calyx hairy, the teeth lanceolate-subulate nearly equal shorter than the corolla in fruit spreading, stipules ovate, leaflets obcordate.—*α.* flowers reddish-purple. *E. B. S.* t. 2950.—*β.* flowers yellow.

α. Naturalized in a few places in the south of England and Jersey. —*β.* Lizard point, Cornwall, "decidedly indigenous." *Rev. W. S. Hore.* ⊙. 6, 7. — Mouth of the calyx hairy in fruit.

7. T. * *stellátum* L. (*starry-headed T.*); villous, heads terminal globose stalked, calyx hairy, its tube closed with hairs, the teeth longer than the corolla setaceous at length dilated veined and spreading, stipules broadly ovate crenate ribbed, leaflets obcordate, stem short spreading. *E. B.* t. 1545.

Sea-shore, Sussex, between Shoreham harbour and the sea, in great plenty. ⊙. 6—8. — A singular and beautiful species, with long *calyces*, and, at first, straight, setaceous *teeth*, which conceal the small cream-coloured *corolla*, and then become greatly enlarged, spreading in a stellated manner.

8. T. *arvénse* L. (*Hare's-foot T.*); heads very hairy soft cylindrical terminal stalked, calyx-teeth longer than the corolla permanently setaceous at length somewhat spreading, stipules ovate-acuminate, leaflets lanceolate obtuse, stems erect much branched. *E. B.* t. 944.

Corn-fields and dry pastures, abundant. ⊙. 7—8. — *Stem* 6—12 inches high. *Flowers* very minute, almost white. Remarkable for its numerous, subcylindrical, soft, hairy *heads* or *spikes*.

9. T. *striátum* L. (*soft knotted T.*); downy, heads terminal and axillary ovate subsolitary sessile, calyx in fruit ventricose striate very rigid hairy with unequal straight small setaceous teeth, leaflets obcordate or obovate nearly entire, stipules ovate cuspidate, stems ascending. *E. B.* t. 1843.

Dry pastures and fields, frequent. ⊙. 6, 7. — *Stem* 4—8 or 10 inches long, more or less procumbent or reclined, pubescent. *Leaves* in this and the next with the veins straight and at the margin not thickened. *Flowers* small, purplish-red. *Cal.* deeply furrowed, oval, a little swollen, with 5, almost setaceous, straight, not spreading *teeth*; its throat marked with a thick ring.

10. T. *Boccóni* Savi (*Boccone's T.*); pods terminal and axillary sessile ovate-cylindrical, calyx cylindrical in fruit, the teeth unequal subulate straight leaflets obovate or oblong-lanceolate toothed glabrous above, stipules oblong with a long subulate point. *E. B. S.* t. 2868.

Dry places in Cornwall, very rare. Cadwith near Ruan minor; and Cathellian between the Lizard point and Kynance cove. ☉. 7. — *Stem* 2—6 inches high. *Calyx* not ventricose in fruit as in the last, and not spreading as in the next species: its throat hairy within.

11. T. *scábrum* L. (*rough rigid T.*); heads terminal and axillary sessile ovate, calyx in fruit cylindrical, the teeth unequal subulate in fruit spreading very rigid 1-nerved, leaflets obcordate serrulate, stipules ovate-cuspidate, stems procumbent. *E. B.* t. 903.

Chalky or dry sandy fields near the sea, on the east coast to Kincardineshire, on the west to Anglesea. ☉. 5—7. — A small spreading *plant* with many terminal and axillary, sessile, ovate *heads*, very rigid in fruit. *Leaflets* with the veins thicker and curved near the margin.

†† *Throat of the calyx naked.*

12. T. *glomerátum* L. (*smooth round-headed T.*); heads terminal and axillary sessile globose, calyx-teeth ovate very acute leafy veiny at length reflexed, leaflets obcordate toothed, stipules ovate much acuminated, stems procumbent. *E. B.* t. 1063.

Gravelly heaths and pastures in the east and South of England. ☉. 6. — Similar to the last, but with rounder *heads*, and broader, greener, and more foliaceous and spreading *teeth* to the *calyx*.

13. T. *stríctum* L. (*upright round-headed T.*); glabrous, heads terminal and axillary stalked globose, calyx at length campanulate with nearly equal subulate spreading teeth, leaflets elliptic lanceolate denticulate, stipules rhomboid pointless denticulate, stems erect. *E. B. S.* t. 2949.

Rocky banks near the sea, rare. Landewednack, and Old Lizard Head, Cornwall. Jersey. ☉. 6, 7. — *Stem* 2—3 inches high in British specimens, often 6—10 inches in foreign ones. *Leaves* glabrous, beautifully striate and toothed, lower ones obovate. *Stipules* large, pointless, with glandular teeth. *Heads* with a minute membranous cup-shaped involucre at their base; *bracteas* none at the base of the flowers. *Flowers* never truly deflexed as in the foreign *T. parviflorum*, although by the ripening of the fruit the lower ones sometimes appear so.

14. T. *suffocátum* L. (*suffocated T.*); heads sessile roundish, petals shorter than the membranaceous faintly striate calyx whose teeth are broadly subulate falcate recurved. *E. B.* t. 1049.

Sandy sea-shores, rare. On the coasts of Norfolk and Suffolk, Anglesea and the south of England. ☉. 6, 7. — *Stems* 3—4 inches long. Remarkable for its dense sessile *heads* of inconspicuous *flowers* and for its thin, delicate, scarcely striate *calyx*. Whole plant glabrous, unless *T. congestum* Guss. be considered a variety.

15. T. *subterráneum* L. (*subterranean T.*); heads lateral

stalked hairy of few flowers, at length deflexed and throwing out from their centre thick fibres palmated at the extremity (abortive calyces) which are closely bent down over the reflexed fruit. *E. B.* t. 1048.

Dry gravelly pastures in England. ⊙. *5, 6.* — *Stem* 3—6 or 8 inches long, decumbent, hairy, with large, ovate, membranaceous *stipules*. *Flowers* long and very slender, almost white. *Peduncles* at length elongated; so that the heads of flowers reach the ground: the young *fruit* then becomes deflexed, and from the top of the peduncle there arise many thick short fibres with *5* palmated teeth at their extremity, which soon become recurved over the fruit and serve to bury it in the soil. From the number of teeth terminating each of the above-mentioned fibres, as well as from their comparative length and thickness, it is natural to conclude, with De Candolle, that the latter are abortive *calyces*. *Petals* partially caducous. *Legumes* large, ovate-globose.

**** Flowers sessile. Cal. with the upper lip remarkably inflated after flowering and arched above. Standard deciduous.*

16. T. *fragíferum* L. (*Strawberry-headed T.*); heads with a multifid involucre as long as the calyx at the base globose upon long axillary stalks, calyx after flowering inflated membranaceous reticulated downy with the two upper teeth bent down, stem creeping, leaflets obcordate serrated. *E. B.* t. 1050.

Meadows and pastures. 2. 7, 8. — *Flowers* very small, purplish-red. The *heads* of *flowers*, nearly globose in flower but completely so in fruit, are then an inch in diameter, and often more or less coloured, so as not unaptly to represent a strawberry. Mouth of the *calyx*, as in the following species, very oblique when inclosing the fruit, from the one half remaining unaltered while the other becomes enlarged and inflated.

17. T. * *resupinátum* L. (*reversed T.*); heads with a minute involucre at the base hemispherical at length globose on stalks at first only about as long as the petiole, corollas resupinate, calyx after flowering membranaceous reticulated inflated hairy acute, two of the teeth longer patent, leaflets obovate, stem prostrate. *E. B. S.* t. 2789.

Meadows near Bristol; near the Poole ballast-quay at Ham, Dorset; Cheshire, near New Brighton; Lancashire, near Everton. ⊙. 7.

***** Flowers usually pedicellate (bright yellow). Standard persistent, deflexed, dry, enveloping the fruit.*

18. T. *procúmbens* L. (*Hop T.*); heads broadly oval many-flowered dense, pedicels much shorter than the calyx, standard at length deflexed furrowed, leaves stalked, leaflets obcordate, central one on a longer stalk. *E. B.* t. 945.

Dry pastures and borders of fields, frequent. ⊙. 6—8. — Primary or central *stem* erect; lateral ones or branches ascending or procumbent, sometimes wanting. This is well distinguished from the following by its large, dense, hop-like *heads* of *flowers*, and the *standard* which is striate when old.

19. T. *mínus* Relh. (*lesser yellow T.*); heads of 8—15 close flowers on rigid peduncles, pedicels rarely half the length of the tube of the calyx, upper calyx-teeth about ⅓ of the length of the lower, standard truncate obscurely furrowed much broader than and quite covering the mature legume, lower leaf-stalks much longer than the stipules, leaflets obcordate central one on a longer stalk, stems decumbent hairy. *E. B.* t. 1256.

Dry pastures and road-sides, frequent. ⊙. 6, 7. — We entertain many doubts whether this and the next are essentially distinct, or even if the characters assigned are constant: the pedicels certainly vary considerably in length, being sometimes so short that the flowers may be almost called sessile, sometimes almost as long as the tube of the calyx.

20. T. *filifórme* L. (*slender yellow T.*); heads on capillary peduncles of 2—5 lax racemed flowers, pedicels longer than the tube of the calyx, upper calycine teeth half the length of the lower ones, standard even deeply notched as narrow as and not covering the ripe legume, leaf-stalks scarcely the length of the stipules, leaflets obcordate equally stalked, stem glabrous. *E. B.* t. 1257. T. micranthum *Viv.*

Dry pastures and road-sides, frequent. ⊙. 6, 7.

10. Lótus *Linn.* Bird's-foot Trefoil.

Cal. 5-toothed; teeth nearly equal. *Keel* ascending, much acuminate. *Legume* cylindrical, somewhat spongy within, and imperfectly many-celled. — Flowers *umbellate:* peduncles *bearing a leaf at their apex.* Leaves *trifoliolate.* — Name; supposed to be one of the three kinds (the *herbaceous*) of the λωτος of the Greeks.

1. L. *corniculátus* L. (*common B.*); heads depressed umbellate 5—10-flowered, peduncles very long, calyx-teeth of the flower-bud straight, the two upper ones always converging, claw of the standard obovate and inflated above stems decumbent. — *α. vulgaris;* leaves obovate nearly glabrous. — (*a*) everywhere glabrous or nearly so, leaflets thin. L. corniculatus *L.: E. B.* t. 2090. — (*b*) leaflets thick fleshy. — *β. villosus;* leaves obovate and as well as the stem and calyx clothed with very long spreading hairs. — *γ. tenuifolius;* leaflets narrow lanceolate or linear-obovate. L. tenuis *Kit.: E. B. S.* t. 2615.

α. Pastures everywhere, abundant, the second form near the sea. — *β.* rare. Higham, Kent; Budleigh Salterton; Sandgate. —

γ. not very common. 4. 7, 8. — The two upper *calycine teeth* converge with a rounded sinus between them: in the next they diverge forming an acute angle.

2. L. *májor* Scop. (*narrow-leaved B.*); heads depressed umbellate 8—12-flowered, peduncles very long, calycine teeth subulate from an angular base always spreading, the two upper ones diverging, claw of the standard linear, leaflets obovate, stems nearly erect tubular. *E. B.* t. 2091.

Sides of ditches and moist bushy places, by no means unfrequent. 4. 7, 8.— The place of growth of this plant, in moister situations than *L. corniculatus*, consequently inducing a greater development of every part, is, in itself, almost sufficient to account for the trifling variations which distinguish it from that well-known species. It is sometimes nearly glabrous, but usually hairy; and a very hairy state has been gathered in Ireland.

3. L. *angustíssimus* L. (*slender B.*); villous, heads 1—4-flowered, peduncles scarcely twice as long as the leaves, leaflets ovate-lanceolate, calyx-teeth straight in the bud as long as the tube or longer, stems procumbent, legumes slender.—*α. minor*; heads 1—2-flowered, legumes about 6 times longer than the calyx often 20-seeded. L. diffusus *E. B.* t. 925.—*β. major*; heads 2—4-flowered, legumes rugose shorter and broader about 2—3 times the length of the calyx about 12-seeded. L. hispidus *Desf.*: *E. B. S.* t. 2823.

South of England, very rare. — *α.* Castle rock at Hastings, Sussex; at Kingsteignton and Bishopsteignton, Devon: Stokes Bay, near Gosport, Hants. Strand, near Passage, Ireland. Jersey. — *β.* Cornwall, near the Lizard and Penzance; Devonshire. ⊙. 5—8. — *Flowers* much smaller, and aspect very different from any of the preceding. The more luxuriant the specimens are, the thicker and shorter is the legume: in this respect our British specimens of the *var. β.* accord better with *L. hirsutus* Desf. as originally described from cultivated plants, than do wild ones from the south of Europe. Sometimes *var. α.* has the *legume* only ½ a line thick and 12 lines long, and *β.* a line thick and only 6 lines long; but numerous intermediate states may be observed. The characters usually derived from the relative length of the *calyx-tube* and teeth, the length of the *peduncles*, the beak of the *legumes*, and the shape of the *leaflets* and *stipules*, only apply to British specimens, and are quite insufficient to separate foreign ones of these two varieties.

Tribe III. ASTRAGALEÆ. *Legume spuriously and longitudinally* 1- *or* 2-*celled, by the introflexion of one of the sutures. Stamens diadelphous* (9 *and* 1). *Stems herbaceous, or somewhat shrubby. Leaves pinnate.* (Gen. 11, 12.)

11. OXÝTROPIS *De Cand.* Oxytropis.

Keel with a narrow point. *Legume* tumid 2-celled (more or

less perfectly); *cells* formed by the inflexed margins of the upper suture.—Named from οξυς, *sharp*, and τροπις, a *keel*; one of the essential characters of this genus, as distinguishing it from the preceding.

1. O. *Uralénsis* DC. (*hairy Mountain O.*); stemless, leaflets about 12 pairs ovate acute densely clothed with silvery hairs, scape erect longer than the leaves with spreading hairs, legumes erect ovate-cylindrical silky with a recurved point, style persistent. Astragalus *L.*: *E. B.* t. 466. Ox. Halleri *Bunge* (not *Vill.*)

Dry pastures in Scotland, chiefly near the sea. Queensferry; Montrose; Mull of Galloway; Argyle; Ross; Sutherland. ♃. 6, 7.—A very beautiful plant, clothed with silky hairs, especially on the young leaves. *Leaflets* 8—12 pairs, on foreign specimens sometimes 20 pairs, with an odd one, ovate, oblong or narrow-lanceolate, acute. *Scape*, when in *fr.*, 4—6 inches high. *Flowers* bright purple, capitate, somewhat spreading. *Legumes* sometimes 2-celled, sometimes only divided to the middle, in the same plant. We cannot distinguish the European from the Siberian plant.

2. O. *campéstris* DC. (*yellowish Mountain O.*); stems very short procumbent, leaflets about 12 pairs elliptic lanceolate sprinkled with shining hairs, peduncles ascending about the same length as the leaves, legumes erect ovate inflated pubescent semibilocular. Astragalus *L.*: *E. B.* t. 2522. A. sordidus *Willd.*

Rocks facing the south, a little to the north of Bradoony, in the Clova mountains. ♃. 7.—*Flowers* capitate, yellowish, tinged with purple. The Scotch plant belongs to the variety or species called *O. sordida*, but we perceive no essential difference between this and *O. campestris*.

12. Astrágalus *Linn.* Milk-vetch.

Keel obtuse. *Legume* 2-celled (more or less perfectly); *cells* formed by the inflexed margins of the lower suture.—Αστραγαλος, one of the bones of the heel, is the Greek name for one of the species, in allusion to the knotted root of that individual plant to which it was formerly applied.

1. A. *glycyphýllus* L. (*sweet M.*); stem prostrate, spikes ovate, leaves longer than the peduncles, leaflets oval, stipules ovate-lanceolate free, legumes somewhat triangular linear curved sessile erect glabrous. *E. B.* t. 203.

Woods and thickets, in a gravelly or calcareous soil. Rare in Scotland; about Edinburgh, Queensferry, and Arbroath. ♃. 6—9.—Well distinguished by its large size. *Stem* prostrate. 2—3 ft. long. *Leaves* with large ovate acute *stipules*, which are free from each other and from the petiole. *Flowers* dingy yellow. *Legumes* an inch or more in length, curved.

2. A. *hypoglóttis* L. (*purple Mountain M.*); stem prostrate, spikes ovate, leaflets slightly emarginate, stipules united, peduncles longer than the leaves, legumes ovate stipitate erect capitate hairy 2-seeded. *E. B.* t. 274.

Dry gravelly or chalky pastures; chiefly in the east of England and Scotland, as far north as Blair in Athol. 4. 6, 7.—*Stem* weak, a few inches in length. *Leaflets* elliptic-ovate, retuse, hairy. *Stipules* united together, but free from the petiole. *Peduncles* longer than the leaves, curved upwards. *Heads* of *flowers* large in proportion to the size of the plant, bluish-purple, sometimes white. *Legumes* ovate, acuminate, hairy, stalked within the calyx.

3. A. *alpínus* L. (*alpine M.*); pubescent, stem ascending, spikes capitate, leaflets elliptical, stipules ovate free, peduncles the length of the leaves, legumes elliptical pointed at both ends stipitate pendulous racemose clothed with black hairs 2—3-seeded. *E. B. S.* t. 2717. Phaca astragalina *DC.* and others.

Head of Glen Dole, Clova; and Little Craigindal, Braemar. 4. 7.—*Stem* slender, much and diffusely branched. *Racemes* of few, spreading or drooping *flowers*, white, tipped with purple.

Tribe IV. HEDYSAREÆ. *Stamens diadelphous* (9 *and* 1). *Legume separating transversely into one or more* 1*-seeded joints or cells, but otherwise indehiscent. Leaves pinnate with an odd one without tendrils.* (Gen. 13—16.)

13. ORNÍTHOPUS *Linn.* Bird's-Foot.

Cal. elongated, tubular. *Keel* very small, obtuse. *Legume* compressed, curved, of many close single-seeded joints, whose sides are equal.—Flowers *capitate;* peduncles *bearing a leaf at their apex* —Name: ορνις, ορνιθος, a *bird*, and πους, a *foot*, from the similarity of the seed-vessel to a bird's foot.

1. O. *perpusíllus* L. (*common B.*); leaves pinnate with 6—9 pairs of leaflets and a terminal one, peduncles longer than the leaves, flowers nearly sessile, legumes curved upwards with a beak scarcely longer than the upper joint. *E. B.* t. 369.

Sandy and dry gravelly soil; not unfrequent in Scotland. ☉. 5—7.—*Stem* 2—6 inches high, much branched at the base and spreading. *Leaflets* oval. *Flowers* white with red lines.

14. ARTHROLÓBIUM *Desv.* Joint-vetch.

Cal. elongated, tubular. *Keel* very small, obtuse. *Legume* cylindrical, curved, of many close single-seeded joints, whose sides are equal.—Flowers *capitate;* peduncles *naked at the apex.* —Name: αρθρος, a *joint*, and λοβος, a *pod*, from the jointed character of the *seed-vessel.*

1. A. *ebracteátum* DC. (*Sand J.*); stem filiform, peduncle about equal to the leaves 2—4-flowered, stipules very minute,

leaves pinnate with many pairs of equal elliptic-oblong leaflets, the lower ones remote from the stem. *E. B. S.* t. 2844.

Sandy ground near Grand Havre, Guernsey, but rare; Alderney; Scilly. ⊙. 6—8.

15. Hippocrépis *Linn.* Horse-shoe Vetch.

Cal. campanulate. *Keel* about as long as the wings, acuminate. *Legume* compressed, submembranaceous, of numerous joints, which are curved like a horse-shoe, so that each legume has many notches on one side.—Flowers *umbellate*, *axillary and nearly sessile.*—Name: ἱππος, a *horse*, and κρηπις, a *shoe*, from the form of the notches of the fruit.

1. H. *comósa* L. (*tufted H.*); cæspitose, perennial, peduncles longer than the leaves, flowers 5—8 umbellate, legumes curved scabrous with glabrous joints and semicircular notches. *E. B.* t. 31.

Chalky and limestone banks and pastures, plentiful in the chalky counties of England. Near Ayr, Scotland. ♃. 5—8.—*Stems* 4—6 inches high, much branched and woody at the base. *Leaflets* 4—6 pairs, with an odd one, obovate-elliptical. *Peduncles* long. *Flowers* pale-yellow, much resembling those of *Lotus corniculatus;* but the *legume* is quite different, and very remarkable: its notches are about twice as broad as deep, whereas, in the foreign *H. glauca*, they are much wider.

16. Onóbrychis *Tourn.* Saint-foin.

Keel truncate, longer than the wings. *Legume* sessile, of one indehiscent joint, compressed, coriaceous, prickly, crested or winged.—Flowers *racemose.*—Named: ονος, an *ass*, and βρυχω, to *bray;* from that animal braying in order to get at it.

1. O. *satíva* Lam. (*common S.*); leaves pinnate nearly glabrous, legumes toothed on the lower margin with elevated wrinkles on the sides, wings of the corolla as short as the calyx, the keel as long as the standard, stem elongated. Hedysarum Onobrychis *L.*: *E. B.* t. 96.

Dry chalky hills and open downs, in various parts of England. ♃. 6, 7.—A plant cultivated to great advantage in dry, and especially chalky, soils.

Tribe V. Vicieæ. *Stamens diadelphous* (9 *and* 1). *Legume* 1-*celled*, 2-*valved*, *several-seeded*, *the suture not introflexed. Cotyledons thick*, *farinaceous. Leaves pinnate*, *with the common petiole not articulated upon the stem*, *and ending in a tendril*, *bristle*, *or leaflet; sometimes wanting*, *but with a tendril or leaf-like petiole.* (Gen. 17—19.)

17. Vícia *Linn.* Vetch. Tare.

Style filiform, with its upper part hairy all round, or with a

tuft of hair beneath the *stigma.*—Leaves *usually with tendrils.*—Name originally derived, according to Théis, from *Gwig*, Celtic; whence also *Wichen* in German, *βικιον* in Greek, *Vesce* in French, and *Vetch* in English.

* *Peduncles short, axillary, few-flowered. Calyx equal at the base. Styles with a dense tuft of hairs beneath the stigma.* Cybospermum.

1. V. *lathyroides* L. (*Spring V.*); flowers sessile solitary, leaflets 2—6 lower ones retuse, stipules entire not impressed with a spot, calyx-teeth subulate, standard glabrous, legumes linear glabrous, seeds nearly cubical tubercled. *E. B.* t. 30.

Road-sides and dry pastures, not unfrequent. ☉. 4—6.—Much resembling a starved state of *V. sativa*, or especially *V. angustifolia*; from both of which it may be known by its calyx with narrower teeth and not gibbous at the base, the smaller, more purple *flower*, scarcely so large as the *leaflets*, with a less reflexed *vexillum*, and by the rough or dotted *seeds*. Here, too, the *leaflets* are fewer on a petiole, the *tendril* is simple, the *stem* procumbent.

** *Peduncles short, few-flowered. Calyx gibbous at the base on one side. Style with a dense tuft of hairs beneath the stigma.* Euvicia.

2. V. *sativa* L. (*common V.*); flowers 1—2 axillary nearly sessile, leaflets 6—10 lower ones retuse or obcordate upper ones often narrower or linear, stipules toothed with a more or less evident spot, calyx-teeth lanceolate-subulate, standard glabrous, legumes linear pubescent or rarely glabrous, seeds globose smooth.—*α. sativa;* upper leaflets elliptic-oblong, flowers usually in pairs, pods erect. *E. B.* t. 334.—*β. angustifolia;* upper leaflets narrower, flowers usually solitary, pods spreading. V. angustifolia *Roth.: E. B. S.* t. 2614. V. Bobartii *Forst.: E. B. S.* t. 2708.

α. Cultivated ground, frequent.—*β.* Dry pastures in a sandy or gravelly soil. ☉ or ♂. 5, 6.—*Flowers* purple and blue or red particularly in the small varieties. *Hilum* of the *seed* long, linear. Our *var. α.* we have nowhere seen in a perfectly wild state; it is that commonly cultivated. The *β.* has smaller flowers; it is supposed by some to include two species, but by cultivating *V. Bobartii*, we observed it pass into *V. angustifolia.*

3. V. *sépium* L. (*Bush V.*); racemes 4—6-flowered nearly sessile, calyx-teeth unequal, legumes upright glabrous, leaflets 4—8 pairs ovate obtuse gradually smaller upwards upon the petiole. *E. B.* t. 1515.

Woods and shady places, frequent. ♃. 6—8.—*Stem* 1—2 ft. high. *Leaflets* large. *Standard* glabrous. *Hilum* of seed long, linear.

4. V. *lævigáta* Sm. (*smooth-podded V.*); flowers solitary nearly sessile, calyx-teeth nearly equal, standard glabrous, legumes

reflexed glabrous, stems ascending, leaflets about 4 pairs bluntish very glabrous, stipules unstained. *E. B.* t. 483.

On the pebbly shore of Weymouth, Dorsetshire; now extinct. ♃. 7, 8. — Allied to the two next in its herbage. This species we do not possess. The above is the only station recorded for it in the whole world, and there it is now lost. It may, therefore, reasonably be conjectured to be a peculiar form of some other species, perhaps a glabrous state of *V. lutea*, which does grow on the shore at Weymouth; but if the segments of the calyx are nearly equal, as may be inferred from the figure in *E. B.* and Smith's description, it would seem rather more allied to *V. sordida* W. et K.

5. V. *lútea* L. (*rough-podded yellow V.*); flowers sessile solitary, calyx-teeth unequal, standard glabrous, legumes reflexed hairy, stems diffuse, leaflets obtuse or acute, stipules coloured upper ones ovate. *E. B.* t. 481.

Rocky or stony ground especially near the sea. Cornwall, Suffolk, Sussex, Derbyshire. On Glastonbury Tor-hill. Weymouth. Mearnshire; between Montrose and Arbroath; hills at Queensferry; Dunure Castle, Ayrshire, abundant. ♃. 6—8. — *Stems* 6—12 inches high, weak. *Leaflets* elliptical-lanceolate, hairy beneath and at the edges, 6—9 pairs on a petiole. *Flowers* large, yellow. *Legumes* compressed. *Seeds* with a short *hilum* in this and *V. hybrida*. The stipules in this, the last, and the next species, do not seem to differ in form; they are hastate about the middle of the plant, but become ovate upwards by the smallness of the lateral lobes.

9. V. *hýbrida* L. (*hairy-flowered yellow V.*); flowers nearly sessile solitary, calyx-teeth unequal spreading, standard hairy, legumes reflexed hairy, stems ascending, leaflets abrupt, stipules unstained upper ones ovate. *E. B.* t. 482.

On Glastonbury Tor-hill. Swan Pool near Lincoln. ♃. 6, 7. — *Flowers* yellow, reddish externally. — Similar to the last, but distinguished by its hairy *standard*.

** *Peduncles elongated, few-flowered. Calyx gibbous at the base. Style with a tuft of hairs beneath the stigma.* **Aracus.**

7. V. *Bithýnica* L. (*rough-podded purple V.*); peduncles rather shorter than the leaves 1- or rarely 2-flowered, legumes upright rough, upper petioles with two pairs of lanceolate leaflets, stipules toothed. *E. B.* t. 1842.

Bushy places in gravelly soil, mostly near the sea, but rare. Southern counties of England; also Essex, Worcester, Gloucester, and Wales. ♃. 7, 8. — *Flowers* purple, all but the wings, which are whitish. *Leaflets* varying much in breadth, sometimes elliptic-lanceolate, sometimes nearly linear: there is generally but one pair on the lowest petioles.

**** *Peduncles elongated, many-flowered. Calyx gibbous at the base.* Cracca.

8. V. *Crácca* L. (*tufted V.*); peduncles many-flowered longer than the leaves, flowers imbricated, leaflets lanceolate slightly hairy with tendrils, stipules half arrow-shaped nearly entire. *E. B.* t. 1168.

Bushy places. 4. 6—8. — *Stem* 2—3 ft. high. *Flowers* numerous, crowded, drooping and imbricated, of a fine bluish-purple. *Style* hairy all round in the upper part; hairs rather longer on the under side below the stigma, but scarcely forming a tuft, as in the true *Vicia.*

9. V. *O'robus* DC. (*Wood bitter V.*); leaves pinnate hairy with 7—10 pairs of ovate-oblong acute leaflets without tendrils, stipules half arrow-shaped slightly toothed at the base, peduncles many-flowered at length longer than the leaves, stem branched decumbent hairy. Orobus sylvaticus *L.*: *E. B.* t. 518.

Rocky and mountainous woods and thickets in the north. 4. 5, 6. — *Flowers* purplish-white in unilateral *racemes. Style* filiform, equally pubescent all round its upper part.

10. V. *sylvática* L. (*Wood V.*); peduncles many-flowered longer than the leaves, leaflets elliptic-oblong mucronate, stipules lunate deeply toothed at their base, tendrils branched. *E. B.* t. 79.

Bushy places in mountainous countries, in Scotland, the north and north-west of England, Wales, and Ireland. It has been found near Newmarket; and in Oxfordshire, and Kent. 4. 6—8. — *Stems* 3—6 ft. high, climbing by means of its branching tendrils. *Leaflets* 6—8 or 10 pairs. *Flowers* very beautiful, numerous, white, streaked with bluish veins. *Style* equally pubescent all round towards the stigma.

***** *Peduncles elongated, few-flowered. Style equally pubescent all round. Calyx equal at the base. Annual plants.* Ervum.

11. V. *tetraspérma* Lois. (*slender T.*); leaflets 3—6 pairs linear obtuse or acute, peduncles 1—7-flowered, legumes oblong-linear glabrous 4—8-seeded. — *α.* leaflets 4—6 pairs oblong linear obtuse mucronate, tendrils usually branched, peduncles pointless or with a soft point as long as the leaves 1—3-flowered, legumes 4—6-seeded. Ervum *L.*: *E. B.* t. 1223. — *β.* leaflets 3—4 pairs narrow linear acute, tendrils simple, peduncles aristate at length about twice as long as the leaves 1—7-flowered, legumes 5—7-seeded. V. gracilis *Lois.*: *E. B. S.* t. 2904. Ervum *DC.*

Corn-fields, hedges, &c. — *α.* not uncommon in England; more rare in Scotland, as at St. David's, Fifeshire; Ruthven, near Perth;

Arbroath, and in Lanarkshire and Kirkcudbrightshire.—*β.* Cobham, Kent; Bath; Isle of Wight. County of Kerry, Ireland. ⊙. 6—8. — *Stipules* semi-sagittate, entire. Teeth of the *calyx* elongated from a triangular base, shorter than the tube, the two upper ones diverging. Standard of *corolla* in *var. α.* with blue streaks, in *β.* usually without them. *Seeds* globose, with an oblong or oval *hilum*. The chief difference between the two vars. is in the larger flowers of *var. β.*, its narrower and fewer leaflets, the latter causing the leaves to be shorter than the fruit-bearing peduncle; but there seem to be many intermediate forms.

12. V. *hirsúta* Koch (*hairy T.*); leaflets 6—8 pairs linear-oblong truncate, peduncles 1—6-flowered, legumes oblong 2-seeded hairy. Ervum *L.*: *E. B.* t. 970.

Corn-fields and hedges; too frequent. ⊙. 6—8.— *Stems* 2—3 ft. long, weak, straggling and climbing. *Stipules* semi-sagittate, the lower lobe usually cleft into several setaceous segments. *Flowers* very insignificant, pale blue. Teeth of the *calyx* subulate, longer than the tube, the two upper converging. *Seeds* orbicular, slightly compressed, with a long linear *hilum*.

18. LÁTHYRUS *Linn.* Vetchling. Everlasting-Pea.

Cal. with its mouth oblique, its upper segments shortest. *Style* plane, broader upwards, downy on the upper side.—Leaves *with tendrils, or the* petiole *without leaflets.*—Name: λαθυρος, a leguminose plant of Theophrastus.

* *Leaflets wanting.*

1. L. *A'phaca* L. (*yellow V.*); peduncles single-flowered, tendrils without leaves, stipules very large foliaceous cordate-sagittate. *E. B.* t. 1167.

Borders of sandy and gravelly fields, in England, rare. Norfolk, Warwick, and Gloucestershire, and the counties to the south of these. ⊙. 5—8. — True *leaves*, each consisting of a single pair of *leaflets*, are rare, and only exist on this singular plant in the youngest state. *Flowers* yellow.

2. L. *Nissólia* L. (*crimson V. or Grass-Vetch*); leaflets wanting but in place of them a simple linear-lanceolate sessile leaf-like petiole without tendrils, stipules minute subulate. *E. B.* t. 112.

Bushy places, and grassy borders of fields, in England, but scarcely further north than Derbyshire. ⊙. 5, 6.

** *Leaflets one pair.*

3. L. *hirsútus* L. (*rough-podded V.*); peduncles 2-flowered, legumes hairy, seeds tubercled, each tendril with a pair of linear-lanceolate leaflets, stem and petiole winged. *E. B.* t. 1255.

Cultivated fields, rare: Essex; between Bath and Bristol. ☉. 6, 7. — *Flowers* pale, except the *standard*, which is bright crimson.

4. L. *praténsis* L. (*Meadow V.*); peduncles many-flowered, legumes obliquely veined, seeds smooth, tendrils with 2 lanceolate 3-nerved leaflets, stipules arrow-shaped as large as the leaflets, calyx-teeth subulate, stem acutely angled without wings. *E. B.* t. 670.

Moist meadows and pastures, frequent. ♃. 7, 8. — *Stems* 2—3 ft. long, climbing. *Flowers* yellow. *Legumes* obliquely veined. *Seeds* globose, with a small oblong *hilum*. — Cattle are said to be very fond of this common plant.

5. L. *sylvéstris* L. (*narrow-leaved E.*); peduncles many-flowered, legumes reticulated with veins, seeds smooth, tendrils with a pair of ensiform leaflets, calyx-teeth triangular-subulate, stem winged. *E. B.* t. 805.

Thickets and hedges, in the middle and south of England. North Wales. Shore near Whitehaven. Kirkcudbrightshire; and banks of the White Adder, Berwickshire, doubtfully wild. Salisbury Craigs and coast of Angusshire, certainly not indigenous. ♃. 6—8. — *Stem* 5—6 ft. long, broadly winged. *Flowers* large, greenish, with purple veins. *Seeds* compressed, with a long *hilum* half surrounding them.

6. L. **latifólius* L. (*broad-leaved E.*); peduncles many-flowered, legumes reticulated with veins, seeds tubercled, tendrils with 2 ovate-elliptical mucronate leaflets, stipules semi-sagittate broad, stem winged. *E. B.* t. 1108.

Woods, rare, and perhaps always the outcast of gardens. Cambridgeshire, Cumberland, Worcestershire, Bedfordshire, Gloucestershire. Near Kirkcudbright, Scotland. ♃. 7, 8. — A well-known climber, and a great ornament of cottage gardens. Somewhat resembling the last, but with *leaves* much broader, *flowers* larger and more purple, and *seeds* tubercled and wrinkled.

*** *Leaflets two or more pairs.*

7. L. *palústris* L. (*blue Marsh V.*); peduncles 3—6-flowered, tendrils with 2—4 pairs of linear-lanceolate acute leaflets, stipules half arrow-shaped lanceolate, stem winged. *E. B.* t. 169.

Boggy meadows and thickets in several parts of England; near London; in Berkshire, Leicestershire, Derbyshire, Lancashire, Yorkshire, Hampshire, Suffolk, Cambridgeshire, and Norfolk. North and South Wales; Galloway, Scotland. ♃. 6—8. — *Stem* 2—3 ft. high, climbing. *Leaflets* about 2 inches long. *Flowers* bluish-purple.

8. L. *marítimus* Big. (*Sea-side E.*); peduncles many-flowered shorter than the leaves, tendrils with 3—4 pairs of oval leaflets, stipules as large as the leaflets unequally cordato-hastate with the angles acute, stem angled without wings. Pisum *L.*:

E. B. t. 1046. — *α.* compact robust, leaflets obovate-elliptical obtuse on a recurved common petiole. — *β.* straggling, slender, leaflets elliptical-lanceolate acute, common petiole straight.

Pebbly beach of Lincolnshire, Suffolk, and the south coast of England. Kerry, Ireland. — *β.* Burraforth, Unst, Shetland. ♃. 7, 8. — The *style* of this plant is as in *Lathyrus*, to which Bigelow has removed it. The *var. β.*, brought by Dr. M'Nab from Shetland in 1837, in its slender straggling habit and narrow leaves comes very near the *L. Altaicus* Ledeb., but that has much smaller stipules and cylindrical legumes. The same form is found in Iceland and Arctic America.

19. O'ROBUS *Linn.* Bitter-vetch.

Cal. obtuse at the base, oblique at the mouth, its upper segments deeper and shorter. *Style* linear, downy above.—Leaves *pinnate, without tendrils.* — Name: *ορω*, to *strengthen* or *invigorate*, and *βους*, an *ox*, because yielding food for cattle; or rather originally from the Celtic *erw* or *ar*, a *ploughed field*; whence come Arvum, Ervum, herba, and many other words in Latin and Greek.

1. O. *tuberósus* L. (*tuberous B.*); leaflets 2—4 pairs glaucous beneath, stipules half arrow-shaped toothed at the base, stem simple erect winged.—*α.* leaflets oblong or lanceolate, apiculate. *E. B.* t. 1153. Lath. macrorhizus *Wimm.* — *β.* leaflets linear. O. tenuifolius *Roth.*

Mountain-thickets, frequent. — *β.* Kinnaird; and Moy Woods, Inverness-shire; near Elgin. Devon, Cornwall. New Forest, Hants. Ashdown Forest, Sussex. ♃. 5—7. — *Roots* tuberous, eaten by the Highlanders, under the name of *Cairmeil* (supposed to be the *chara* of Cæsar, *Bell. Civ.* iii. 48.), a very small quantity being said to allay or prevent hunger. *Stem* 1 ft. high. *Flowers* in long-stalked axillary *racemes*, purple, veined. *Legume* long, pendulous, cylindrical, black. *Seeds* globose.

2. O. *níger* L. (*black B.*); leaflets 3—6 pairs ovate or elliptical, stipules linear-lanceolate acute, stem branched angular erect. *E. B. S.* t. 2788. Lathyrus *Wimm.*

Shaded rocks, Scotland. Den of Airly, Forfarshire. Pass of Killiecrankie, Perthshire. Craiganain, a rock within 2 miles of Moy House, Inverness-shire. ♃. 6, 7. — Turns black when drying. *Stem* not winged. Lower *stipules* half-arrow shaped, upper ones almost subulate. *Seeds* oval.

ORD. XXVII. ROSACEÆ.

Calyx 4—5-lobed, free or adherent, with the *ovary*. *Petals* 5, perigynous, equal. *Stamens* perigynous, definite or indefinite, with an incurved æstivation; *anthers* 2-celled, bursting longitudinally

Carpels many, rarely solitary, and then situated between two of the lobes of the calyx (when these are 5), 1-celled, 1—2 or more seeded, free, or combined with each other and with the calyx. *Styles* simple, often lateral, distinct or combined. *Seeds* ascending or suspended, nearly without *albumen: embryo* straight, with fleshy or foliaceous *cotyledons.* — Herbs, *or* Shrubs, *or* Trees. Leaves *alternate, with* stipules *one on each side the base of the petiole.* — The pulpy fleshy fruits are esculent; while the plants which produce them are often poisonous from the presence of Prussic acid, with which many of the species abound. Laurel-water is extracted, not from a true Laurel, but from an individual of this Natural Order, *Prunus Lauro-Cerasus:* the *Bitter-Almond* owes its flavour to that acid. Some produce a gum; others are astringent. Roots of *Tormentil* yield a dye; others are febrifuges. The qualities residing in the species of this Order entitle it to a high rank among British Vegetables.

Sub-Ord. I. AMYGDALEÆ. *Carpel solitary, superior. Style* 1. *Calyx-tube deciduous. Stipules free.*

1. PRUNUS.

Sub-Ord. II. ROSEÆ. *Carpels not adhering to the calyx-tube. Stipules united to the petiole.*

Tribe 1. SPIRÆIDÆ. *Petals several. Fruit a ring of follicles not inclosed within the calyx tube.*

2. SPIRÆA.

Tribe 2. POTENTILLIDÆ. *Calyx-tube short and nearly flat, not enclosing the fruit. Petals several. Achenes or drupes* 5 *or more upon a common flat or convex receptacle.*

* *Achenes tipped with a long awn (the permanent style).*

3. DRYAS. Awns feathery, not jointed. Receptacle flat.
4. GEUM. Awns jointed. Receptacle elongated.

** *Achenes or drupes with a short style.*

5. RUBUS. Drupes. Calyx simple (without external bracteoles).
6. FRAGARIA. Achenes on a large fleshy deciduous receptacle. Calyx double (with as many external bracteoles at its summit as divisions, and alternate with them).
7. COMARUM. Achenes on a spongy permanent receptacle. Calyx double. Petals smaller than the calyx.
8. POTENTILLA. Achenes numerous, on a dry flat receptacle. Calyx double.
9. SIBBALDIA. Achenes 5—10, on a minute dry receptacle. Calyx double.

Tribe 3. SANGUISORBIDÆ. *Achenes* 1—2, *enclosed within the dry calyx-tube.*

* *Style from near the base of the achene.*

10. ALCHEMILLA. Petals 0. Calyx double (8-cleft). Stamens 1—4.

** *Style terminal.*

11. Sanguisorba. Petals 0. Calyx single (4-cleft,) with 2—3 external bracteoles at its base. Stamens 4. Stigma capitate.
12. Poterium. Petals 0. Calyx single (4-cleft). Flowers usually monœcious. Stamens many. Stigma tufted.
13. Agrimonia. Petals 5. Calyx single (5-cleft), without external bracteoles.

Tribe 4. Rosidæ. *Petals* 5. *Achenes numerous, enclosed within the fleshy calyx-tube, which is contracted at the orifice.*

14. Rosa.

Sub-Ord. III. Pomeæ. *Petals several. Carpels united and adhering by their back to the calyx-tube, thus resembling an inferior fruit. Stipules free.*

15. Mespilus. Calyx-segments large, foliaceous. Petals large, roundish.
16. Crataegus. Calyx-segments small. Petals large, roundish. Cells of fruit bony.
17. Cotoneaster. Calyx-segments small. Petals small, erect.
18. Pyrus. Calyx-segments small. Petals large, roundish. Cells of fruit cartilaginous.

Sub-Ord. I. AMYGDALEÆ. *Cal. inferior, deciduous. Ovary solitary, superior. Style* 1, *terminal. Fruit a solitary drupe, with one or two seeds suspended from the top of their cell. Trees or shrubs with simple leaves and stipules free from the petiole. All the parts abound in Prussic acid.* (Gen. 1.)

1. Prúnus *Linn.* Plum and Cherry.

Cal. 5-cleft. *Pet.* 5. *Nut* of the *drupe* smooth, or furrowed at the margin.— Named *προυνη* in Greek, according to Theophrastus.

* *Fruit covered with bloom. Young leaves convolute.* Prunus *D C.*

1. P. *commúnis* Huds. (*common P.*); peduncles solitary or in pairs, leaves elliptic or ovate-lanceolate somewhat downy beneath especially when young.—*α. spinosa;* peduncles glabrous, leaves at length glabrous, branches spinous. P. spinosa *L.: E. B.* t. 842.—*β. insititia;* peduncles and under-side of the leaves pubescent, branches slightly spinous. P. insititia *L.: E. B.* t. 841.—*γ. domestica;* peduncles glabrous, leaves at length glabrous beneath except sometimes the midrib, branches unarmed. P. domestica *L.: E. B.* t. 1783.

Hedges, coppices, and woods.—*γ.* perhaps truly wild at Twineham, Sussex; and Isle of Wight. ♄. 4, 5.—Hudson and Smith were of opinion that *var. β.* and *γ.* are forms of the same plant, and we are satisfied that the first of these cannot be satisfactorily distinguished from *P. spinosa.* Dr. Bromfield also observed that in Hampshire *P. spinosa* is linked to the other two "by such imperceptible and evanescent degrees of affinity, as to defy any specific formula that can be framed to distinguish them." *P. spinosa* has in general

much more spinous and crooked branches, and smaller leaves; and the flowers are usually solitary and past before the leaves appear. *P. insititia* has often scarcely any spine, and then can only be distinguished by the rather more pubescent leaves. In α., or the *Sloe*, the fruit is small, globose, and very austere; in β., or the *Bullace-tree*, it is larger; and in γ. it is often longer than broad.

** *Fruit without b'oom. Young leaves conduplicate.* CERASUS *D C.*

2. P. *Pádus* L. (*Bird-Cherry*); flowers in pendulous racemes, leaves deciduous obovate or oval glabrous with two glands at the summit of the foot-stalk. *E. B.* t. 1383.

Woods and coppices, frequent, especially in the North. ♄. 5.—A small *tree*, with acute, doubly serrate *leaves*. *Flowers* white. *Drupes* small, black; *nut* rugose.

3. P. *A'vium* L. (*wild C.* or *Gean*); flowers in nearly sessile lax umbels, calyx-tube pyriform, the segments entire somewhat pointed, leaves drooping ovate-lanceolate. P. Cerasus *Sm.* in *E. B.* t. 706.

Woods and hedges. ♄. 5.—A *tree*. *Flower-buds* not leafy. The stone of the *drupe* adheres to the flesh in this species; in the next it separates readily.—The origin of the common garden *Cherry*.

4. P. *Cérasus* L. (*Morello C.*); flowers in nearly sessile umbels, calyx-tube turbinate the segments crenato-serrate blunt, leaves not drooping oblong-obovate or broadly ovate-lanceolate. *E. B. S.* t. 2863. P. austera. *Ehrh.*

Woods and hedges, in various places in England. ♄. 5.—A bushy plant, 6—8 ft. high, throwing out underground shoots or stems resembling creeping roots, to a considerable distance. *Leaves* erect or horizontal, never drooping, "possessing a firmness and opacity quite wanting in the foliage of the last species." *Bromf.* Inner *scales* of the *flower-buds* leafy.—This is the origin of the Morello cherry, but whether truly distinct from the preceding is to us doubtful. Assuredly in cultivation several of the differences usually assigned disappear, such as the pubescence of the leaf; and as to the leafy nature of the flower-buds, unless the upper figure in *E. B.* t. 706. be also taken from the present species, it seems much alike in both.

SUB-ORD. II. ROSEÆ. *Calyx inferior, more or less permanent. Carpels free from the calyx-tube or merely seated upon it. Stipules adhering to the petiole.* (Gen. 2—14.)

Tribe I. SPIRÆIDÆ. *Petals* 5. *Follicles several, distinct or united, invested by the calyx. Seeds* 1—6, *suspended from the inner edges of the follicle. Shrubs or herbaceous plants.* (Gen. 2.)

2. SPIRÆ'A *Linn.* Spiræa, Dropwort, or Meadow-sweet.

Cal. inferior, equally 5-cleft, persistent. *Pet.* 5, roundish.

Follicles 3—12, usually distinct, 1-celled, 2-valved, with few *seeds*.—Name: supposed to be the σπειρεια of Theophrastus.

1. S. **salicifólia* L. (*Willow-leaved S.*); shrubby, leaves elliptic-lanceolate unequally serrate glabrous, racemes terminal compound. *E. B.* t. 1468.

Moist woods in several parts of the north of England and Scotland. ♄. 7.—A small branching *shrub*. *Flowers* rose-coloured, in crowded *racemes*. *Stamens* longer than the *petals*.

2. S. *Filipéndula* L. (*common D.*); herbaceous, leaves interruptedly pinnate, all the leaflets uniform deeply cut and serrate, flowers paniculato-cymose, follicles hairy. *E. B.* t. 284.

Dry pastures, especially in a chalky or gravelly soil; rare in Scotland. ♄. 6, 7.—*Root* with rather long *tubers*. *Stem* a foot high, panicled above. *Leaflets* small, oblong or lanceolate, alternate ones not half their size. *Stipules* of the rad. leaves linear, entire, of the stem rounded and cut or serrate. *Flowers* yellowish-white, tipped with rose-colour.

3. S. *Ulmária* L. (*Meadow-sweet*); herbaceous, leaves interruptedly pinnate serrate downy beneath, lateral leaflets undivided terminal one largest and lobed, flowers in compound (and as it were proliferous) cymes, follicles glabrous. *E. B.* t. 960.

Meadows, and banks of ponds and ditches, frequent. ♃. 6—8.—*Stems* 3—4 ft. high, branched upward. *Leaflets* ovate, acuminate, very large, especially the terminal 3—5-lobed one; alternate ones minute. *Flowers* yellowish-white, numerous, sweet-scented. *Fruit* twisted.

Tribe II. Potentillidæ. *Fruit a collection of achenes or little drupes, upon a common flat or elevated receptacle. Calyx 4—5-cleft, frequently with little bracts near the summit alternating with the segments (or 8—10-cleft, the segments alternately smaller); the tube short nearly flat and not investing the fruit. Petals usually 4—5. Mostly herbaceous plants, sometimes shrubs. Leaves usually compound.* (Gen. 3—11.)

* *Ovule at a distance from the base of the style. Radicle inferior.*

3. Dryás *Linn.* Dryas.

Cal. 8—10-cleft, its segments equal. *Pet.* 5—8. *Styles* terminal. *Ovules* lateral. Achenes with long feathery not jointed *awns*. *Receptacle* flat.—Name: δρυς, the *oak*, from a distant similarity between their leaves.

1. D. *octopétala* L. (*white D., Mountain Avens*); petals 8,

leaves obtuse simple crenato-serrate.—*E. B.* t. 451. D. depressa *Bab.* in *Ann. Nat. Hist.* x. t. 7.

Frequent in alpine parts of England. Scotland, and Ireland, especially on limestone; north coast of Sunderland, abundant. ♃. 6, 7. — *Stem* short, procumbent. *Leaves* ovate-elliptical, white and downy beneath, petioled. *Flowers* large, white. In a form found in the county of Clare, Ireland, the *calyx* is clothed with nearly black hairs.

4. Géum *Linn.* Avens.

Cal. 10-cleft, alternate segments minute. *Pet.* 5. *Styles* terminal. *Ovules* lateral. *Pericarps* with long geniculate *awns*. *Receptacle* elongated.—Named from γευω, to *yield an agreeable flavour*. The roots of *G. urbanum* are aromatic.

1. G. *urbánum* L. (*common A.*); flowers erect, heads of fruit sessile, upper joint of the awn glabrous and much shorter than the lower one, cauline leaves ternate, radical ones interruptedly pinnate and lyrate. *E. B.* t. 1400.

Woods and hedges, frequent. ♃. 6—8.—1—2 ft. high. *Root-leaves* on long foot-stalks. *Stipules* large, rounded, lobed and cut. *Flowers* small, yellow. *Calyx* and obovate *petals* patent.

2. G. *rivále* L. (*Water A.*); flowers drooping, heads of fruit stalked, upper joint of the awn feathery about as long as the lower one, cauline leaves ternate, radical ones interruptedly pinnate and lyrate. *E. B.* t. 106.

Marshes and wet moory grounds, frequent: sometimes very alpine. ♃. 5—7.—A shorter, but stouter plant than the last. *Flowers* much larger, with erect purplish *calyces* and erect dull purplish-orange-coloured *petals*, broadly obcordate, clawed. *Stipules* small, ovate and toothed. There is a not uncommon plant, the *G. intermedium* Ehrh., which some call a species, but is now proved to be a hybrid between these two[1]: in it the *flowers* are sometimes erect, sometimes drooping, *petals* roundish and clawed, *calyx* and *corolla* intermediate as to position and colour, heads of *fruit* usually sessile, with the upper joint of the awn hairy but shorter than the lower one, and the *stipules* round and toothed; but it varies in these respects, sometimes resembling the one parent more than the other.

** *Ovule nearly opposite to the base of the style, radicle superior.*

5. Rúbus *Linn.* Bramble. Raspberry.

Cal. 5-cleft. *Pet.* 5. *Style* short subterminal. *Ovule* suspended. *Fruit* superior, of several single-seeded juicy *drupes*, placed upon a protuberant spongy *receptacle*.—Name from the

[1] See Dr. T. Bell Salter's observations in the Phytologist, vol. iv. p. 739., where these hybrids are stated to be fertile, forcing upon us the conclusion that the two parents are themselves mere *forms* of the same *species*; or that, which is less probable, true hybrids are fertile in the vegetable kingdom.

Celtic *reub*, to *tear* or *lacerate*, on account of the prickly stems of the true Brambles.

* *Leaves pinnate (or ternate). Stem nearly erect, biennial, woody.*

1. R. *idæ'us* L. (*common R.*); leaves pinnate with 5 or 3 leaflets with close white down underneath, foot-stalks channeled, stems nearly erect downy prickly not rooting, flowers drooping, petals as short as the calyx. *E. B.* t. 2442.

Woods, especially in the north. ♄. 6, 7.—*Stems* of two kinds: one is upright, which the first year produces only leaves, but in the second bears fruit and dies; the other is sarmentose and quite below ground, bearing no leaves, and roots at the extremity, thus forming new plants. *Leaflets* somewhat cut and serrated. *Fruit* scarlet in a wild state.

** *Leaflets 5, digitate or pedate, or ternate, rarely pinnate. Stem*[1] *(mostly) biennial, woody.*

2. (1) R. *suberéctus* And. (*upright B.*); stem nearly erect not rooting nearly glabrous, prickles uniform chiefly confined to the angles without setæ, leaflets quinate or sometimes pinnate without close white down underneath. *E. B.* t. 2572. R. plicatus *W. et N.: E. B. S.* t. 2714.

Thickets, hedges, and boggy places. ♄. 6—8.

2. (2) R. *fruticósus* L. (*common B.*); stem arched rooting angular furrowed nearly glabrous, prickles confined to the angles of the stem uniform without setæ, leaflets quinate with close white down underneath. *E. B.* t. 715.

Thickets and hedges. ♄. 7, 8.

2. (3) R. *rhamnifólius* W. et N. (*Buckthorn-leaved B.*); stem arched rooting nearly glabrous, prickles confined to the angles of the stem uniform without setæ, leaflets quinate paler underneath but not with close white down. *E. B. S.* t. 2604.

Hedges, thickets, and woods. ♄. 7, 8.

2. (4) R. *carpinifólius* W. et N. (*Hornbeam-leaved B.*); stem arched or prostrate rooting hairy, prickles confined to the angles of the stem uniform without setæ, leaflets quinate or ternate without close white down underneath. *E. B. S.*

[1] By *stem* is meant the barren root-shoot; and the prickles and leaves, when not otherwise mentioned, are those upon that shoot. Both here and in the genus *Rosa*, *setæ* are hairs or bristles that are glandular at the apex; *aciculæ* are straight rigid hairs without glands or slender prickles: in some species a gradual transition may be observed from the one extreme to the other, thus reducing the value of any character obtained from them. The form, texture, incision, petiolation, and overlapping of the leaflets and the form of the inflorescence are, in our opinion, too variable to be used for distinguishing the species. All the true Brambles are, if we mistake not, destitute of the underground sarmentose stems of the Raspberries.

t. 2664. R. leucostachys *Sm.*: *E. B. S.* t. 2631. R. macrophyllus *W. et N.*: *E. B. S.* t. 2625.

Hedges, thickets, and woods. ♄. 7, 8.—This and the last appear to be merely the two extremes of the same form, between which there are, it is to be feared, many intermediate states.

2. (5) R. *corylifólius* Sm. (*Hazel-leaved B.*); stem arched rooting nearly glabrous, prickles scattered nearly equal without aciculæ or glandular hairs or setæ, leaflets quinate or ternate without close white down underneath. *E. B.* t. 827.

Hedges and thickets. ♄. 7, 8.—Scarcely distinct from the two preceding.

2. (6) R. *glandulósus* Bell. (*Glandular B.*); stem arched or decumbent rooting hairy not glaucous, prickles scattered unequal with copious aciculæ or setæ, leaflets quinate or ternate without close white down underneath, calyx erect patent or reflexed in fruit. *E. B. S.* t. 2883. R. Koéhleri *W. et N.*: *E. B. S.* t. 2605.

Woods, thickets, and hedges, ♄. 7, 8.

2. (7) R. *cæ'sius* L. (*Dewberry*); stem prostrate or arched rooting more or less glaucous, prickles scattered unequal with (sometimes very few) setæ, leaflets ternate or quinate without close white down underneath, calyx closely clasping the fruit. *E. B.* t. 826.

Thickets, hedge-banks, and borders of fields. ♄. 6, 7.—The two last are probably extremes of the same thing; but if distinct, we would refer the plants with stems copiously covered with aciculæ or setæ to the former, although the calyx almost clasps the fruit; and to the latter those with few aciculæ and setæ but with a calyx clasping the fruit, although the stem be scarcely glaucous.[1]

**** Leaflets ternate. Stem herbaceous or nearly so.*

3. R. *saxátilis* L. (*Stone B.*); stems slender rooting herbaceous nearly unarmed, flower-shoots erect with a panicle of few flowers, leaflets ternate, slightly downy. *E. B.* t. 2233.

Stony mountainous places, especially in the north. ♃. 6—8.—Rooting stems or runners annual; erect ones slender, 8—10 inches

[1] We are almost quite convinced—*practically*, not only because the characters taken from the young shoots, and disappearing when they are older and begin to blossom, are not permanent, but because none of the reputed species of the shrubby Brambles are either anatomically or physiologically distinct, all passing into each other without any fixed assignable limit; and, *theoretically*, from a consideration of what is requisite to constitute a difference between the other European species of *Rubus*, that all of the present section are mere varieties approaching on the one side to *R. idæus*, on the other to *R. saxatilis*, with both of which many fertile and permanent hybrids may have been formed, and are still forming. We have, however, presented above (though without any attempt to give synonyms, except a reference to *E. Bot.*) what we consider the more prominent forms or races, numbering them as if only constituting a single species, and have indicated how those ought perhaps to be reduced to *four* types.

high, with a few weak *prickles*. *Leaflets* sometimes only 2, ovate. *Petals* minute, narrow, greenish yellow. *Fruit* of very few (1—4) red, (comparatively) large *drupes*.

4. R. **árcticus* L. (*arctic R.*); stems erect not rooting unarmed bearing (mostly) one flower, petals roundish notched, leaflets ternate glabrous obtusely serrated. *E. B.* t. 1585.

Mountain turfy bogs. Isle of Mull, and Ben-ghlo in Athole. ♃. 6.—The only place in Scotland which agrees with the foreign localities of this plant is in the low moors near the station of *Menziesia cærulea*; where stood the old Caledonian forest: there only need it to be looked for; the two stations above given have been repeatedly searched in vain for it. *Stems* 4—6 inches high, slender, having 3—4 *leaves*, with creeping *roots* or underground leaflets, rooting stems. *Flowers* of a deep rose-colour, large for the size of the plant. *Fruit* purplish red, highly prized by the Swedes.

**** *Leaves simple.*

5. R. *Chamæmórus* L. (*Mountain R.*, or *Cloudberry*); diœcious, stem herbaceous erect unarmed one-flowered, leaves lobed and plaited. *E. B.* t. 716.

Alpine turfy bogs; North of England, Wales, Scotland, and Ireland. ♃. 6, 7.—Erect, 8—10 inches high, creeping as in the last species and in *R. idæus*. *Flowers* large, white. *Fruit* large, orange-red, of an agreeable flavour.

[Rúbus *Linn.* Bramble. Blackberry. Raspberry.

In order to exhibit the principles adopted in other Botanical Manuals of the British Flora, we insert here the views of our valued friend, Dr. T. Bell Salter, on the British *Rubi*. The barren stem and terminal leaflet are those which are described, unless it be otherwise expressed. Our readers will no doubt regret that, for the sake of conciseness, no character has been given of the species, which shall suffice to include all the forms under it, but only of what we presume to be the common state of the plant in this country. For, however, a more detailed description of the various species and forms, vide Dr. Salter's "*Descriptive Table of British Brambles*," in the Botanical Gazette for May, 1850, vol. ii. pp. 113—131.

* *Stem shrubby, erect biennial.*

Group i. Suberecti Lindl. *Stem upright, biennial, leaves pinnate or digitate.* (Fruit variable in colour.)

1. R. *idæ'us* L. (*common R.*); stem prickly-setose, leaves pinnate, leaflets tomentose beneath, flowers drooping, petals erect. *E. B.* t. 2442.—β. *trifoliatus*; stem shining, leaves ternate.—γ. *Leesii*; leaflets 3, sessile, overlapping. R. idæus γ. Leesii *Bab.*

Thickets and moist heaths, frequent; β. less common; γ. rare. 5, 6. — *Leaflets* 3—7, white beneath. *Fruit* very pulpy, usually scarlet rarely amber-coloured. *Prickly setæ* usually dark red, pale in the plants bearing amber-coloured fruit. *Plant* spreading by suckers.

2. R. *suberéctus* And. (*red-fruited Br.*); stem without hairs or setæ round, prickles straight small few or many, leaves pinnate or digitate, leaflets cordate acuminate, flowers erect, petals spreading slightly exceeding the calyx. *E. B.* t. 2572. — β. *trifoliatus*; prickles few, leaves ternate.

Boggy heaths and wet places, chiefly in the north, not frequent; β. rare. 6, 7. — *Panicle* mostly branched. *Petals* white. *Fruit* red, soon dying. *Leaflets* 3—9, glabrous on both sides, pale green. This species and the following increase abundantly by seed.

3 R. *plicátus* W. and N. (*upright Bl.*); stem angular without hairs or setæ, prickles few curved, leaves quinate, leaflets mostly ovate plicate, flowers erect, petals spreading, twice as long as the calyx. *W. and N.: E. B. S.* t. 2714.—β. *carinatus*; leaflets lanceolate, carinated.

Moist heaths and boggy places, not rare; β. rare. 5, 6. — *Panicle* usually simple, racemose, with long pedicels. *Petals* white or pale pink. *Fruit* scarcely black. *Leaflets* dark green above pale beneath.

(See 4 R. *rhamnifolius* β.)

** *Stem shrubby arched or procumbent, perennial, rooting at the end.*

† *Stem destitute of setæ.*

Group ii. Corylifolii Lindl. *Stem polished, glabrous or slightly hairy; hairs patent, translucent; leaves digitate quinate; leaflets pubescent on both sides, pliant.* (Fruit black in this and the four following groups.)

a. *Calyx reflected from the fruits.*

4. R. *rhamnifólius* W. and N.? (*Buckthorn-leaved Br. or Bl.*); stem angled, prickles equal, lower pair of leaflets small directed backwards, panicle branched. *Borr.: W. and N.?* — α. *cordifolius*; stem decumbent, leaflets cordate. R. *cordifolius W. and N.?* — β. *nitidus*; stem suberect, panicle leafy, spreading. R. nitidus *W. and N.* — γ. *sylvaticus*; stem villous, prickles numerous. R. sylvaticus *W. and N.* R. villicaulis *W. and N.*

Hedges and thickets, frequent. 5, 6. — A variable plant; β. has much the habit of *R. plicatus*; it is, however, distinctly osculant with α. and γ. *Stem* green. *Petals* white or pale pink.

5. R. *macrophýllus* W. and N.? (*large-leaved B.*); stem furrowed, slightly hairy, prickles equal few mostly small, leaflets elliptic-acuminate very pliant. *E. B. S.* t. 2625. *W. and N.?*

— *β. Schlechtendalii;* prickles somewhat stronger: *Bab.* R. Schlechtendalii *W. and N.?*

Woods and thickets, frequent. 6, 7. — Whole plant pale, closely allied to the preceding. *Petals* usually small and white; in *β.* larger and somewhat pink.

6. R. *corylifólius* Sm. (*Hazel-leaved B.*); stem glabrous often glaucous, prickles unequal, leaflets cordate mostly rugose, lower pair sessile overlapping.—*β. fastigiatus;* leaflets flat. R. fastigiatus *Bab.* — *γ. Smithii;* panicle cymose prickly and glandular, *Leighton.* R. corylifolius *E. B.* t. 827. — *δ. incurvatus;* panicle narrow prickly and glandular. R. incurvatus *Bab.*

Hedges and thickets, common; *β.* unfrequent; *δ.* rare, Lamberris, *Mr. Babington.* 5, 6. — *Stem* decumbent green or tinted purplish. *Leaflets* often crisped. *Petals* small mostly white.

(See, —— with hairy stems, 8. R. *carpinifolius β.* and 12. R. *leucostachys β.*: —— with glabrous stems, 10. R. *discolor β.*, 20. R. *Wahlbergii β.*, and 22. R. *cæsius γ.*)

b. *Calyx embracing the fruit.*

7. R. *Salteri* Bab. (*Bell Salter's B.*): stem angled slightly hairy, prickles small, leaflets elliptic acute, panicle compound. *Bab.* — *β. Balfourianus;* panicle corymbose. R. Balfourianus *Bab.*

Woods, rare. 6. — Whole plant pale green, spreading abundantly by creeping stolons, as well as rooting at the end of the stems. *Petals* small white.

(See 9. R. *Sprengelii γ.*)

Group iii. Carpinifolii. *Stem clothed with patent translucent hairs, and numerous uncinate prickles: leaves pedate-quinate or ternate, leaflets carinated, their surfaces nearly glabrous and concolorate, strongly veined beneath; panicle subtomentose.*

8. R. *carpinifólius* W. and N. (*Hornbeam-leaved B.*); stem arched angular, prickles with broad bases mostly confined to the angles of the stem, panicle branched, calyx reflexed. *W. and N.: E. B. S.* t. 2664. — *β. roseus;* stem but little hairy, panicle with a few setæ. *W. and N.* — *γ. corymbosus;* panicle corymbose prickly, terminal flower subsessile.

Thickets in a sandy soil; *β.* in woods. 6—9. Plant bright green. *Petals* mostly light pink: in *β.* bright rose-coloured. After the first panicles pass out of flower, lateral ones continue to form till the close of autumn.

9. R. *Sprengélii* W. (*Sprengel's B.*); stem prostrate round prickly on all sides with slender hooked prickles, panicle corymbose, calyx embracing the fruit. — *a. Borreri;* prickles

numerous, leaves pedate-quinine. R. Borreri *Bell Salter* olim: *Bab.* — *β. Wilsoni;* plant bearing a few setæ. R. Borreri *β.* Wilsoni *Bell Salter* olim: *Bab.* — *γ. Weiheï;* stem slender, prickles fewer, leaves ternate, panicle lax few-flowered. R. Sprengelii *W. and N.*

Heaths and open places, not frequent; *γ.* in woods. 6, 7. — *Stem* prostrate, often concealed. *Panicles* upright, often appearing to spring from the ground, especially in *γ.* *Flowers* pale in *α.* and *β.*, bright rose-coloured in *γ.*

Group iv. Tomentosi. *Stem angled, more or less silky with divaricating opaque hairs; prickles silky at the base, mostly confined to the angles of the stem, often in pairs; leaves digitate; leaflets polished above, hoary beneath; panicle tomentose.*

10. R. *díscolor* W. and N. (*common B.*); stem arched furrowed subglaucous with minute silky hairs, prickles mostly uncinate, leaves quinate, leaflets elliptic crenato-serrate usually decurved at the margin. *Lindl.* R. fruticosus *E. B.* t. 715. — *β. thyrsoideus;* silky pubescence obsolete, tomentum of the panicle short. R. thyrsoideus *Wimm.?* R. fruticosus *W. and N.?* — *γ. macroacanthus;* prickles very large, tomentum of the panicle loose. R. discolor *W. and N.*

Hedges, woods, and heaths, common. 6—8. — *Stem* dark. The petals vary from pure white to a full deep red. *Leaflets* generally 5, less decurved in plants growing in the shade.

11. R. *argénteus* W. et N. (*Silvery B.*); stem pubescent tomentose, prickles numerous uncinate slender, leaves quinate, leaflets obovate cuspidate doubly serrate pubescent tomentose beneath. *W. et N.*—*β. macroacanthus;* prickles large pungent. R. macroacanthus *W. and N.* — *γ. tenuis;* stem slender, panicle with lower branches attenuated. R. discolor *var.* argenteus *Bell Salter* olim: *Bab.*

Thickets and hedges, not frequent. 7, 8. Nearly allied to the preceding and following species. *Silky pubescence* more abundant and less close than in the preceding, and glittering white. *Petals* pink.

12. R. *leucostáchys* Sm. (*Downy-spiked B.*); stem tomentose, prickles straight, leaves quinate, leaflets acuminate unequally and doubly serrate. — *α.* leaves elliptic coriaceous, serratures acute. R. leucostachys *Sm.: E. B. S.* t. 2631. — *β. vestitus;* prickles weak, leaflets orbicular flaccid scarcely hairy beneath, tomentose clothing loose. R. vestitus *W. and N.?* R. vulgaris *W. et N.* — *γ. argenteus;* tomentose clothing very close, otherwise like *α.*

Common. *α.* and *γ.* in hedges, and *β.* in woods. 7, 8. — A

variable plant, β. being so altered by the effect of shade as to be often taken for a different species. *Stem* dark purple in α. and γ., green in β. *Leaflets* coriaceous in α. and γ., flaccid in β. *Petals* white or pink.

(See 14 R. *rudis* δ., and 16 R. *Koehleri* ε.)

†† *Stem setose.*

Group v. RADULÆ. *Stem armed with prickles, aciculi, hairs, and setæ on all sides; leaves quinate; leaflets obovate cuspidate acuminate, all stalked; calyx reflexed from the fruit; fruit of many drupes shining.*

13. R. *Rádula* W. (*File-stemmed B.*); stem striate, prickles unequal passing by gradation into aciculi or setæ, leaflets finely serrate pubescent and strongly nerved beneath, panicle pubescent-tomentose, sparingly prickly, sepals ovate tomentose. *W. and N.: Lindl.* — β. *Hystrix*; glands and setæ fewer, leaves less nerved beneath. R. Hystrix *W. et N.* — γ. *pygmæus*; stem and prickles slender. — δ. *foliosus*; panicle leafy to the top. R. folius *W. and N.* — ε. *Lingua*; transition from prickles to setæ less gradual, panicle spreading, sepals pointed. R. Lingua *W. and N.* R. scaber *Bab.*

Hedges and thickets, mostly in the south, on a sandy soil, not frequent; γ. and δ. rare. 7, 8. — Whole plant pale green. *Sepals* very tomentose, without setæ or leaf-point. *Petals* pink.

14. R. *rúdis* W. (*rough B.*); stem angular, prickles equal mostly confined to the angles of the stem, hairs setæ and aciculi equal, leaflets doubly and coarsely serrate-prickly beneath, panicle hairy, with long prickles and setæ, sepals lanceolate leafy pointed prickly and setose. *W. et N.: Lindl.* — β. *Leightoni*; prickles of the panicle uncinate. R. Leightoni *Lees: Leighton.* — γ. *foliosus*; plant smaller, panicle leafy to the top. — δ. *Reichenbachii*; aciculi and setæ few. R. Reichenbachii *W. et N.*

Margins of copses in a stiff soil, frequent; rare, near Swapstone, *Rev. A. Bloxam.* 6, 7. — *Stem* dark fuscous, in β. inclining to green. *Prickles* long, not passing by gradation into aciculi and setæ. *Leaflets* jagged, dark green. *Panicle* large, and long. *Petals* small, white.

Group vi. KOEHLERIANI. *Stem armed with numerous prickles, aciculi and setæ on all sides; leaves ternate or quinate, if quinate the lower pair of leaflets sessile. Fruit of many drupes, shining.*

a. *Calyx reflected from the fruit.*

15. R. *Güntheri* W. (*Günther's B.*); stem decumbent an-

gular hispid with unequal prickles and aciculi, hairs and setæ few, leaves 3—5-nate, leaflets obovate-cuspidate nearly glabrous on both sides doubly crenato-dentate, sepals ovate-lanceolate cuspidate hairy. *W. and N.: Bab.* R. thyrsiflorus *W. and N.* — *β. pyramidalis;* leaflets decurved, sepals prickly. *Bab.* — *γ. Babingtonii*, stem furrowed, angles rounded. R. Babingtonii *Bell Salter* olim. — *δ. Bloxamii;* branches of the panicle short corymbose. R. Babingtonii *β* Bloxamii *Bell Salter* olim: *Bab.*

Thickets, rare. 7, 8. — *Panicle* often extremely large and branched, the branches themselves forming large panicles. *Flowers* and *fruit* small. *Petals* white

16. R. *Koéhleri* W. (*Koehler's B.*); stem hairy setose with numerous broad-based prickles and aciculi, leaves pedate-quinate, leaflets ovate-acuminate pubescent and prickly beneath, sepals lanceolate setose and prickly. *E. B. S.* t. 2605. — *β. apiculatus;* stem procumbent, hairs and setæ not numerous. R. apiculatus *W. et N.*—*γ. foliosus;* plant very prickly, panicle leafy to the top. R. Koehleri *W. et N.* — *δ. fusco-ater;* leaflets rotund-ovate finely serrate, lower pair overlapping. *Borr.* R. fusco-ater *W. et N.* — *ε. fuscus;* prickles mostly confined to the angles of the stem. *Bab.* R. fuscus *W. et N.*

Woods and thickets. 7, 8. — *Stem* very prickly, purplish-green. *Leaves* glossy, soft beneath. *Panicle* variable often much branched. *Petals* white or pale pink.

17. R. *humífusus* W. (*trailing B.*); stem procumbent, prickles and aciculi numerous slender often gland-tipped, leaves ternate or pedate-quinate, leaflets cordate acuminate doubly and unequally serrate, branches of the panicle appressed thickly clothed with setæ aciculi and slender gland-tipped prickles, sepals lanceolate setose prickly. *W. et N.: Bab.*

Woods and thickets, very rare. 6, 7. — *Plant* light green, creeping with upright panicles growing apparently from the earth; well distinguished by this mode of growth, and its needle-like gland-tipped prickles. *Petals* white.

(See 8. R. Carpinifolius *β.*)

b. *Calyx patent after flowering.*

18. R. *hírtus* Waldst. et Kit. (*hairy B.*); stem procumbent setose and very hairy, prickles and aciculi horizontal, leaves 3—5-nate, leaflets ovate-cordate unequally serrate soft and pubescent, panicle setose and hairy. *W. and N.*—"*β. Menkei;* leaves moderate 5- or 3-nate, leaflets oval lanceolate, panicle hairy, calyx prickly." *Bab.*

Thickets, rare. "*β.* near Tonbridge Wells: *Mr. Borrer.*" 7, 8.—

Plant with the habit of the last species. When the leaves are ternate, the leaflets are lobed as in R. *cæsius*. *Petals* small, white.

19. R. *glandulósus* Bellardi (*glandulose* or *Bellardi's B.*); stem hairy setose, prickles unequal, leaves mostly ternate, leaflets oval cuspidate strongly veined beneath, panicle bracts and sepals very setose. — *α. Bellardi;* stem round, prickles small, setæ abundant, leaflets finely and equally serrate. R. *glandulosus Borr.: E. B. S.* t. 2883. R. Bellardi *W. and N.* — *β. Lejeunii;* plant less setose, leaves unequally serrate. R. Lejeunii *W. and N.* — *γ. rosaceus;* stem angular, larger prickles uncinate, leaflets coarsely serrate. R. rosaceus *W. and N.* — *δ. pallidus;* leaflets usually 5 narrow. R. pallidus *W. and N.?*

Woods and thickets, not frequent. 7—9. — *Stems* reddish-green. *Leaflets* pale green above, tawny-pale with pink veins beneath. *Inflorescence* with a mossy covering of red glands and setæ. *Sepals* often leaf-pointed. *Petals* rose-coloured.

(See 9. R. *Sprengelii* β.)

Group vii. Cæsii Lindl. *Stems glaucous with few hairs and setæ; fruit of few drupes, glaucous.* (Fruit blue or bluish.)

20. R. *Wahlbergii* Arrh. (*Wahlberg's Dewberry* or *B.*); stem with a few hairs and glands and numerous thick-based prickles, leaves pedate-quinate, leaflets overlapping pubescent rugose, panicle leafy tomentose with numerous falcate prickles, sepals patent ovate tomentose and glandular. — *β. glabratus;* plant nearly without setæ. R. Grabowskii *Weihe? Bab.*

Hedges, rare. 6, 7. — *Stem* very prickly, pinkish-green. *Leaflets* thick and soft, light green above, pubescent and pale beneath. *Panicle* large. *Petals* bright rose-coloured. *Fruit* often abortive and, according to Bloxam, "remarkably hairy."

21. R. *nemorósus* Hayne (*larger Dewberry*); stem procumbent, leaves quinate, leaflets ovate-cordate acuminate pubescent overlapping, calyx setose, sepals ovate acute: *Bab.* R. dumetorum *W. et N.; Lindl.* R. cæsius *β. Borr.*

Thickets, not unfrequent. 6, 7. — Intermediate between R. *Wahlbergii* and R. *cæsius*, from the latter of which, though scarcely distinct, it is distinguished by the quinate leaves. *Petals* rose-coloured. *Fruit* glaucous, black.

22. R. *cæsius* L. (*Dewberry*); stem weak, prickles unequal passing by gradation into hairs and setæ, leaves ternate, leaflets oval acuminate, lateral pair lobed externally, calyx setose, sepals ovate lanceolate cuspidate. *E. B.* t. 826; *W. and N.* — *β. pseudo-cæsius;* leaflets all lobed, fruit mostly abortive. *W. and N.* — *γ. tenuis;* nearly destitute of hairs and setæ. R.

tenuis *Bell Salter* olim, *Bab.* — *δ. ferox;* prickles strong uncinate. R. tenuis *β.* ferox *Bell Salter* olim.

Hedges and sides of streams, common. 6—9. — *Stem* purplish-green. *Leaflets* light green and soft. *Sepals* often leaf-pointed. *Petals* white or pale pink. *Fruit* glaucous, often blue.

**** Stem herbaceous, annual.*

Group viii. Herbacei Wimm. et Grab. *Stems herbaceous, annual; flowering-stems growing from the crown of the root.*

23. R. *saxátilis* L. 24. R. *árcticus* L. 25. R. *Chamæmórus* L. (For descriptions of these three species, vide pp. 122, 123.)

6. Fragária *Linn.* Strawberry.

Cal. 10-cleft, segments alternately smaller. *Pet.* 5. *Stam.* many. *Style* short, lateral, near the base of the carpel. *Ovule* ascending. *Achenes* many, minute, placed upon a large fleshy deciduous *receptacle.* — Named from *fragrans, odorous;* on account of its fragant smell.

1. F. *vésca* L. (*Wood S.*); calyx of the fruit spreading or reflexed, hairs of the peduncles widely spreading, those of the pedicels erect or close-pressed silky. *E. B.* t. 1524, and *S.* t. 2742.

Woods and thickets, frequent. ♃. 5—7.

2. F. **elátior* Ehrh. (*Hautboy S.*); calyx of the fruit spreading or reflexed, hairs of the peduncles and pedicels widely spreading somewhat deflexed. *E. B.* t. 2197.

Groves and hedges, in several places in England, where it has escaped from cultivation. ♃. 6—9. — The plants which bear perfect stamens never produce fruit; but it is doubtful whether it ought to be called imperfectly monœcious or dicœcious: most probably the latter.

7. Cómarum *Linn.* Marsh Cinque-foil.

Cal. 10-(or more) cleft, segments alternately smaller. *Pet.* 5 (or more) shorter than the calyx. *Style* short lateral, at a distance from the base of the carpel. *Ovule* suspended. *Achenes* many, minute, inserted on a large spongy permanent *receptacle.* — Named from κομαρος, a term applied by Theophrastus to some plants of the *Arbutus* tribe.

1. C. *palústre* L. (*purple M.*). *E. B.* t. 172. Potentilla Comarum *Nestl.*

Marshes and peat-bogs, frequent. ♃. 5—7. — *Stems* ascending. *Leaves* petioled, with 7 lanceolate deeply serrated *leaflets*, upper ones

quinate or ternate, sessile with a pair of ovate *stipules*. *Flower-stalk* branched. *Flowers* of a deep dingy purple.

8. Potentílla *Linn.* Cinque-foil.

Cal. 8—10-cleft, segments alternately smaller. *Pet.* 4—5. *Style* short, lateral or nearly terminal. *Ovule* suspended or ascending. *Achenes* numerous, minute, placed upon a small dry flat *receptacle*.—Named from *potens*, *powerful*, from the medicinal properties attributed to some of the species.

* *Leaves pinnate. Flowers yellow.*

1. P. *fruticósa* L. (*shrubby C.*); leaves pinnate, leaflets (generally 5) oblong-lanceolate entire, stem shrubby. *E. B.* t. 88.

Rocky and bushy places, rare. Wastdale Screes, Cumberland. Teesdale, Durham, and Yorkshire. By the river Don, near Doncaster. Rock-forest, Clare, Ireland. ♄. 6, 7.—Hairs on the *receptacle* elongated.

2. P. *anserína* L. (*Silver-weed*); leaves interruptedly pinnate serrate silky especially beneath, peduncles axillary single-flowered, stem creeping. *E. B.* t. 861.

Moist meadows and road-sides, frequent. ♃. 6, 7.—Varying much in the degree of silkiness; sometimes silky and white on both sides. *Flowers* large. Hairs on the *receptacles* in this and the next shorter than the glabrous *achenes*. *Leaflets* lanceolate.

** *Leaves pinnate. Flowers white.*

3. P. *rupéstris* L. (*Strawberry-flowered C.*); stem erect dichotomous, leaves pinnate, leaflets cuneate-ovate serrate hairy, of the root leaves 5, of the cauline 3. *E. B.* t. 2058.

Very rare, on Craig Breidhin, Montgomeryshire. ♃. 5, 6.—*Flowers* large. *Achenes* even, glabrous.

*** *Leaves digitate. Flowers yellow.* (*Hairs on the receptacle shorter than the glabrous achenes.*)

4. P. *argéntea* L. (*hoary C.*); leaves quinate, leaflets cuneiform cut white and downy beneath, their margins revolute, stem decumbent or ascending. *E. B.* t. 89.

Pastures and road-sides, especially in a gravelly soil. ♃. 6, 7.—*Flowers* terminal, small, subcorymbose.

5. P. *vérna* L. (*Spring C.*); leaflets of root-leaves 5—7 obovate green on both sides sharply-toothed upwards hairy on the ribs beneath and at the edge, lower stipules linear acute, petals obcordate longer than the calyx, stem prostrate. *E. B.* t. 37.

Dry pastures, especially in hilly countries. ♃. 4—6.—A small,

woody, procumbent plant, 3—5 inches in length. *Flowers* at the end of weak leafy branches.

6. P. *alpéstris* Hal. fil. (*orange alpine C.*); radical leaves of 5 wedge-shaped somewhat hairy leaflets deeply cut in the upper half, stipules obtuse, upper ones ovate, lower ones lanceolate, petals heart-shaped, stem ascending. P. aurea *E. B.* t. 561 (not *L.*).

Mountains of the north of England. Wales. Breadalbane and Clova mountains of Scotland. ♃. 6. 7.—We have endeavoured, but in vain, to detect some certain character by which this might be distinguished from *P. verna;* the extreme *vars.*, it is true, do appear distinct, but they insensibly pass into each other. In general, however, the terminal tooth of the leaflets is prominent, giving them a rounded form at the apex, while in *P. verna* it is shorter than the others, causing the leaflets to appear truncate or emarginate. If retained as a species, surely the name *Salisburgensis*, given to it by Jacquin, should be preferred to the much more recent one of the younger Haller.

7. P. **opáca* L. (*Saw-leaved hairy C.*); radical leaves of 7 hairy linear wedge-shaped leaflets deeply serrate throughout, stem-leaves ternate mostly opposite, stems ascending, petals about as long as the calyx obcordate-cuneate. *E. B.* t. 2449. P. intermedia, *Nest. Pot.* t. 8.

Received from Scotland (perhaps from a garden) by the late *Mr. Donn* of Cambridge. Hills of Clova; Braes of Balquidder; and rocks by the sea-shore opposite to Dundee: *G. Don;* but found by no one else. ♃. 6.—We have specimens of this, said by *Mr. G. Don* to have been found wild by him, and others from his garden at Forfar. The *leaflets* are coarsely serrate to the base, and in this respect, as well as in its stouter habit, it differs from the two preceding species. All botanists are not quite agreed that *P. opaca* L. and *P. intermedia* Nestl. (or *P. opaca* Jacq.) are the same; the former, from Linnæus saying that the stem is filiform and confounding it with *P. verna*, is not the supposed Scotch plant, if the two be distinct; it has petals longer than the calyx, while they are of the same length in *P. intermedia.* But to us it is very doubtful if the last be not the luxuriant or cultivated form of the other.

8. P. *réptans* L. (*common creeping C.*); stem filiform prostrate creeping, leaves long-stalked, leaflets 5 obovate-cuneiform serrate, peduncles axillary solitary single-flowered longer than the leaf, achenes granulated scabrous. *E. B.* t. 862.

Meadows, pastures, and way-sides. ♃. 6—9.—*Stems* taking root at the joints. *Flowers* yellow.

9. P. *Tormentílla* Sibth. (*Tormentil*); stem-leaves ternate those at the base of the peduncles sessile, leaflets lanceolate or obovate-cuneiform inciso-serrate, stem procumbent or ascending dichotomous upwards, achenes wrinkled.—*a.* leaves all sessile acute except those of the root, stem ascending. Tormen-

tilla officinalis *L.*: *E. B.* t. 863.—β. lower stem-leaves stalked obtuse, stem prostrate sometimes rooting, flowers larger. Tormentilla reptans *L.*: *E. B.* t. 864.

Moors and heathy places, frequent.—β. Hedge-banks, borders of fields and waste places. ♃. 6—8.—To one or other of these *vars.* obviously belongs *P. mixta* of Mitten. *Root* large and woody, used medicinally, and by the Laplanders for staining leather of a red colour. *Peduncles* axillary and terminal, forming a dichotomous cyme or panicle, and never springing from a joint that throws out roots or from the axile of a petiolate leaf.—This varies with 4 or 5 *petals*, when it becomes difficult to distinguish the *var.* β. from *P. reptans*, and some botanists are of opinion that the two plants are identical, their extremes being represented in *E. Bot.* *P. reptans* is often less creeping than in *E. B.* t. 862; and the present is sometimes not so panicled as in *E. B.* t. 864. Mr. Wilson finds them undistinguishable, while Mr. Forster and Nestler think them quite distinct.

******** *Leaves quinate or ternate. Flowers white.*

10. P. * *álba* L. (*white C.*); stems filiform procumbent, root-leaves quinate, upper ones ternate, leaflets oblong with converging serratures silky beneath, achenes glabrous. *E. B.* t. 1384.

Wales (?): *Mr. Haviland* (*in Huds.*). ♃. 6, 7.—Hairs of the *receptacle* shorter than the *achenes*.

11. P. * *tridentáta* Soland. (*three-toothed C.*); leaves ternate, leaflets oblong-cuneiform 3-toothed at the extremity glabrous above hairy beneath, petals oval longer than the calyx, achenes downy, stem ascending. *E. B.* t. 2389.

On Werron Hill, Clova, *G. Don*; but found by no one else. ♃. 5, 6.—Hairs of the *receptacle* elongated in this and the next. A North American species.

12. P. *Fragariástrum* Ehrh. (*Strawberry-leaved C.*); leaves ternate, leaflets obovate deeply serrate silky on both sides (especially beneath), petals obcordate as long as the calyx, stems procumbent. Fragaria sterilis *L.*: *E. B.* t. 1785.

Woods, banks, and dry pastures, frequent. ♃. 3—5.—*Calyx-segments* converging after flowering. *Achenes* glabrous.

9. Sibbáldia *Linn.* Sibbaldia.

Cal. in 10 alternately large and small segments. *Pet.* 5. *Stamens* 5—10. *Style* short, lateral. *Ovule* ascending. *Achenes* 5—10, inserted on a minute dry receptacle (the bottom of the calyx).—Name given in honour of *Robert Sibbald*, who wrote on the Nat. History of Scotland about the latter end of the 17th century, and who published a figure of our Scottish species of this genus.

1. S. *procúmbens* L. (*procumbent S.*); leaves ternate, leaflets wedge-shaped tridentate. *E. B.* t. 897.

Near and upon the summits of the Highland mountains of Scotland, abundant. ♃. 7.—A small, glaucous, slightly hairy plant, woody at the base and roots. *Pet.* small, yellow, sometimes wanting. *Stam.* 5—7. *Pistils* 5—8 or 10.—Nearly allied to *Potentilla*, as Mr. W. Wilson well observes.

Tribe III. SANGUISORBIDÆ. *Achenes* 1 *or* 2, *enclosed within the dry tube of the calyx, which is contracted at the orifice. Calyx* 3- *or* 5-*cleft. Petals* 0 *or rarely* 5.—*Herbs or shrubs. Leaves often compound.* (Gen. 10—13.)

* *Style from near the base of the carpel, ovule ascending.*

10. ALCHEMÍLLA *Linn.* Lady's Mantle.[1]

Cal. 8-cleft, the 4 alternate and outer segments the smallest. *Pet.* 0. *Stam.* 1—4. *Achenes* 1—2.—Named from the Arabic *àlkêmelyeh*, *alchemy*, from its pretended alchemical virtues.

1. A. *vulgáris* L. (*common L.*); leaves reniform plaited 6—9-lobed green underneath, lobes rounded serrate.—*α.* leaves and petioles slightly pubescent or glabrous. *E. B.* t. 597.—*β.* leaves and petioles very pubescent or silky. A. hybrida *Pers.*

Hilly or northern pastures, abundant. ♃. 6—8.—*Stem* 1 ft. high or more. *Radical leaves* large, on long foot-stalks, those of the stem with connate toothed *stipules*, upper ones sessile and very small. *Flowers* in many usually rather lax, corymbose, terminal clusters, yellow-green. *Stam* 4. *Germens* and *achenes* 1—2. *Style* lateral.

2. A. *alpína* L. (*alpine L.*); radical leaves digitate or digitato-partite, leaflets 5—7 obtuse serrate white and satiny beneath. *E. B.* t. 244.—*α.* leaflets distinct to the base.—*β.* leaflets conjoined sometimes to almost a third of their length. A. argentea *Don.* A. conjuncta *Bab.*

Mountains in the north of England, and especially Scotland. On Brandon mountain, Ireland. ♃. 6—8.—One of the most elegant of our native plants. *Flowers* in interrupted spikes of small terminal or lateral corymbs. *Stam.* 4. Our *β.* is said to have been found wild in the Clova mountains by *Mr. G. Don*, and in Glen Sannox, in the Isle of Arran, both in Scotland: it has been for long a well-known denizen of our gardens, under the name of *A. hybrida*; but

[1] Mantle of *our Lady* (the *Virgin Mary*); therefore not "*Ladies' Mantle*," as written by many authors.

although it retains all its characters in cultivation (proving it to be a permanent variety), it appears to us to differ too little from the type of the species, to be admitted as distinct: in this genus, and even this order, the leaflets are not *jointed* with the petiole, and consequently, according to the view of De Candolle, do not form a *compound* leaf, but merely portions of a simple one: in *α.* therefore the leaves are only divided to the base: in *β.* to near the base: there is no other difference. The fig. in *E. Bot.* seems to belong to the var. *β.*

3. A. *arvénsis* Sm. (*field L.*, or *Parsley Piert*); leaves trifid pubescent, lobes cuneate deeply cut, flowers sessile axillary. *E. B.* t. 1011. Aphanes *L.*

Fields and gravelly soils, and on wall-tops, where there is any covering of soil. ☉. 5—8 — *Stems* branched, leafy, 4—8 inches long, frequently prostrate. *Leaves* alternate; *stipules* large. *Stam.* varying in number from 1—4. *Germens* 1 or 2.

** *Style nearly terminal. Ovule suspended.*

11. Sanguisórba *Linn.* Burnet.

Flowers collected into a head, usually perfect. *Cal.* 4-lobed, superior, coloured, with 2—4 scales or bracteas at the base. *Pet* 0. *Stam.* 4. *Stigmas* capitate, papillose. *Achenes* 1—2. Named from *sanguis*, *blood*, and *sorbeo*, to *take up*, or *absorb*; from the supposed vulnerary properties of the plant.

1. S. *officinális* L. (*great B.*); glabrous, spikes ovate, stamens about as long as the perianth. *E. B.* t. 1312.—*β.* spikes cylindrical. *Sm.*

Low moist meadows and pastures, on a calcareous soil; chiefly in the north of England; more rare in the Lowlands of Scotland.—*β.* West of Scotland. ♄. 6—8.— *Stem* 1—2 ft. high, branching upward. *Leaves* pinnate; *leafl.* ovate, somewhat cordate at the base. *Heads* of *flowers* much crowded, dark purple. *Limb* of the *perianth* in 4 ovate segments, its *tube* enveloping the *germen* and having at its base 4 ciliated *scales* or *bracteas* (*calyx* of many others). *Achene* 1, rarely 2. We have not seen the *vdr. β.* ∴ it cannot be *S. media* L. as supposed by Smith, that being a N. American plant with long stamens and a mere *var. of S. Canadensis.*

12. Potérium *Linn.* Salad-Burnet.

Flowers collected into a head, monœcious or polygamous; *upper* ones fertile. *Cal.* with 3 or 4 bracteas at the base. *Pet.* 0.—*Barren fl.* *Cal.* of 4 deep segments. *Stam.* 30—40, with very long flaccid filaments.—*Fertile fl.* *Cal.* tubular, contracted at the mouth, with 4 deciduous teeth. *Stigmas* tufted. *Achenes* 1—2, invested with the hardened 4-angled tube of the calyx.—Named from *poterium*, a *drinking-cup:* the plant

having been used in the preparation of a drink, called in England a *cool-tankard.*

1. P. *Sanguisórba* L. (*common S.*); calyx of fruit sessile glabrous unarmed reticulate-rugulose not pitted, the angles margined, styles 2, stem somewhat angular. *E. B.* t. 860.

Dry and most frequently chalky pastures, abundant. Rather rare in Scotland and Ireland. ♄. 6—8. — *Stem* 1—2 ft. high. *Leaves* pinnate, with ovate serrate *leaflets*. *Flowers* dull purplish. *Inflorescence* in this and the next centrifugal, as in most of the genus. — The leaves taste and smell like cucumber, and are eaten in salad.

2. P. *muricátum* Spach (*muricated S.*); calyx of fruit sessile glabrous wrinkled with pits whose margins are muricated, angles crested, stem somewhat angular.

Dry calcareous soil. Near Cambridge; Heydon and Saffron-Walden, Essex; Box Hill, Warwickshire. ♃. 7. — Very similar to the last, of which it was formerly considered a variety, and from which it is chiefly distinguishable by the fructiferous *calyx*, and the much larger *fruit.*

13. Agrimónia *Linn.* Agrimony.

Cal. turbinate, at length hardened, covered with hooked bristles, 5-cleft. *Pet.* 5, inserted upon the calyx. *Stam.* 7—20. *Achenes* 2.—Name corrupted from *Argemone*, given by the Greeks to a plant supposed to cure the cataract in the eye, called *αργεμα.*

1. A. *Eupatória* L. (*common A.*); cauline leaves interruptedly pinnate softly villous underneath, leaflets 7—9 rounded at the base with 6—8 coarse serratures on each side, terminal one stalked, spikes elongated interrupted, calyx-tube obconical deeply furrowed to the base, the teeth with a straight point, exterior spines spreading. *E. B.* t. 1335.

Borders of fields, waste places, and road-sides. ♃. 6, 7. — *Stem* 2 ft. or more high. *Leaflets* deeply serrate; intermediate smaller ones 3—5-cleft. *Flowers* yellow, in a long simple or branched *spike*, with a 3-cleft *bractea* at their bases.

2. A. *odoráta* Mill. (*fragrant A.*); cauline leaves interruptedly pinnate softly villous underneath, leaflets 7—9 rounded at the base with 6—8 coarse serratures on each side, terminal one stalked, spikes elongated interrupted, calyx-tube campanulate even when in fruit, the teeth with a straight point, exterior spines very patent or reflexed.

Beaumont, Jersey, Hampshire; Start-point, Devon; Gwithian, Cornwall; Lough Neath, Ireland. ♃. 6, 7. — Of this we have seen no British specimens. According to C. A. Meyer, it differs from the last only by the mature calyx.

Tribe IV. Rosidæ. *Achenes numerous, hairy, terminated with the long presistent style, and enclosed within the fleshy (fruit-like) tube of the calyx, which is contracted at the orifice. Sepals 5. Petals 5. Stamens numerous.—Shrubs, with prickly or naked stems. Leaves pinnate.* (Gen. 14.)

14. Rósa[1] *Linn.* Rose. Dog-Rose. Sweet-Briar.

Cal. urn-shaped, fleshy, contracted at the orifice, terminating in 5 segments. *Pet.* 5. *Stam.* many. *Achenes* numerous, hairy, fixed to the inside of the calyx.—Named from the Celtic *Rhos* or *Ros* in modern Gaelic; whence was probably derived *rhodd, red;* also the Greek name for a *rose*, Ῥοδον, and ερυθρος, *red.*

* *Shoots setigerous, prickles slightly curved.*

† *Bracteas large.*

1. R. * *Dicksóni* Lindl. (*Dickson's R.*); "shoots setigerous," prickles scattered slender subulate, leaflets oval coarsely and irregularly serrate hoary and sparingly glandulose beneath, calyx-segments long simple, fruit ovate-urceolate. *E. B. S.* t. 2707.

Ireland; discovered by *Mr. J. Drummond.* (Lindley.) ♄. 6.—Scarcely a native according to Irish botanists: it may prove to be a mere garden *var.* of the next. It is probable that Professor Lindley "has used the term *setæ* for setaceous prickles not tipped with a gland." *Mr. Borrer.*

2. R. * *cinnamómea* L. (*Cinnamon R.*); shoots setigerous, prickles scattered slender subulate, leaflets lanceolate-oblong simply serrate downy and glandulose beneath, calyx-segments long simple, fruit small ovate. *E. B.* t. 2388. (*excl. the fruit.*)

Wood at Aketon Pasture, near Pontefract, Yorkshire (Mr. Sabine has, however, sought for it there in vain). At Birkhill, Galston, Ayrshire, but surely not wild. ♄. 5—7.

†† *Bracteas small or wanting.*

3. R. *spinosíssima* L. (*Burnet-leaved R.*); prickles crowded unequal mostly straight intermixed with setæ, leaflets small simply serrate, their disk eglandulose, calyx simple, fruit nearly globular. *E. B.* t. 187. R. pimpinellifolia *L.*—*β. pilosa;* "very dwarf, leaves acute hairy on the under surface." *Lindl.*

[1] For the characters of all the species of this most difficult genus, we are indebted to Mr. Borrer. Copious synonyms and illustrative remarks, for which there is not room in the present volume, may be found in the second edition of the present Flora, p. 226, &c.

Heaths, &c., chiefly on sand and chalk; most common towards the sea.—β. Ireland. ♄. 5.

4. R. *rubélla* Sm. (*red-fruited dwarf R.*); stem and branches densely setigerous throughout, prickles few slender nearly straight, leaflets simply serrate naked, their disk eglandulose, fruit oblong or urceolate. *E. B.* t. 2521, and fruit t. 2601. fig. 3.

Rare. Sandy sea-coast of Northumberland, sparingly. Banks of the Dee about Abergeldy. ♄. 5. —*Peduncles* setose.

5. R. *Hibérnica* Sm. (*Irish R.*); shoots and ramuli sparingly setigerous, prickles scattered unequal, larger somewhat falcate, leaflets simply serrate hairy beneath, their disk eglandulose, calyx pinnate, fruit nearly globular. *E. B.* t. 2196.

Counties of Derry and Down, particularly near Belfast. Near Lorton, Cumberland. ♄. "6 11." *Smith.*—*Peduncles* naked.

6. R. *Wilsóni* Borr. (*Wilson's R.*); prickles crowded unequal straight intermixed with setæ, leaflets simply serrate hairy, their disk eglandulose, calyx simple, fruit ovate-urceolate. *E. B. S.* t. 2723.

On a declivity by the Menai, near Bangor. ♄. 6, 7. — *Peduncles* setose. Dr. Lindley thinks it a *var.* of *R. mollis:* but this and the two preceding seem to be but one species, only distinguishable from *R. spinosissima* by the scarlet not black fruit. As setæ pass insensibly into slender prickles or aciculæ, the species possessing the one may be expected to exhibit the other in some of its varieties; and the greater or less number of either can form no specific distinction.

7. R. *involúta* Sm. (*prickly unexpanded R.*); prickles crowded unequal straight intermixed with setæ, leaflets doubly serrate hairy glandulose beneath, stem dwarfish. *E. B.* t. 2068, and fruit t. 2601, fig. 2.

Hebrides, and Western Highlands of Scotland. Isle of Arran: Islay; Morven. Near Meggarnie in Glen Lyon, and elsewhere in the Highlands. ♄. 6.—Leaves often scarcely at all glandulose, except on the midrib.

8. R. *Sabíni* Woods (*Sabine's R.*); shoots and ramuli setigerous, prickles scattered unequal straight or nearly so, leaflets doubly serrate hairy glandulose beneath.—α. calyx segments somewhat pinnate. *E. B. S.* t. 2594.—β. calyx segments almost simple, prickles more numerous. R. Doniana *Woods: E. B. S.* t. 2601.—γ. calyx segments almost simple, larger prickles falcate. R. gracilis *Woods.* R. villosa *E. B.* t. 583. (*fig. only.*)

Scotland and north of England.—β. Sussex, Warwickshire, Kingston-upon-Thames, and near Edinburgh. γ. Near Darlington; Pooley Bridge, and between Pooley and Lowther, Cumberland;

and near Keswick. ♄. 6. — We do not see how this really differs from the last: the *leaves* are rather more glandulose, but not so much so as in the next section.

*** Shoots mostly without setæ.*

† Leaves glandulose.

‡ Prickles uniform or nearly so; setæ none or very few.

9. R. *villósa* L. (*villous R.*); prickles uniform nearly straight, leaflets doubly serrate downy glandulose, calyx segments slightly pinnate, root-shoots straight. R. mollis *E. B.* t. 2459.

North of England, Scotland, Wales, and Ireland. ♄. 6, 7. — *Calyx*-segments persistent.

10. R. *tomentósa* Sm. (*downy-leaved R.*); prickles mostly uniform straight or curved, leaflets doubly serrate downy glandulose, calyx segments copiously pinnate. *E. B.* t. 990. R. scabriuscula *Winch. E. B.* t. 1896. (*fig. only?*)

Hedges and thickets, not unfrequent. ♄. 6, 7.—*Calyx*-segments persistent. This is surely a mere variety of the last.

11. R. *inodóra* Fries (*slightly scented B.*); prickles uniform uncinate, leaves doubly serrate hairy mostly glandulose beneath, calyx segments closely pinnate mostly deciduous, ramuli without setæ, fruit elliptical or nearly globular.—*α.* leaves hairy beneath. *E. B. S.* t. 2610, *ad calcem.* R. Borreri *Sm. E. B. S.* t. 2723. R. dumetorum *E. B.* t. 2579.—*β.* leaves hairy on both sides.—*γ.* leaves more copiously glandulose, calyx-segments elongated persistent.

Thickets and hedges chiefly in the south of England. — *β.* near Edinburgh and elsewhere. — *γ.* Glen Roy, Inverness-shire; near Newcastle. ♄. 6. 7.

12. R. *micrántha* Sm. (*small-flowered S.*); prickles uniform uncinate, leaflets doubly serrate hairy glandulose beneath, calyx-segments and pinnæ elongated deciduous, fruit small elliptical and ovate, ramuli sparingly setigerous. *E. B.* t. 2490.

Open bushy commons, thickets and hedges, in the south of England. Abundant on chalk and gravel in some parts of Sussex and Surrey. Essex. South of Ireland. ♄. 6, 7.

‡‡ Prickles various, intermixed with setæ.

13. R. *rubiginósa* Linn. (*true S.*); prickles numerous, larger uncinate, smaller subulate, leaflets doubly serrate hairy glandulose beneath mostly rounded at the base, calyx-segments and pinnæ elongated persistent, primordial fruit pear-shaped. *E. B.* t. 991.

Open bushy places, chiefly in the south of England. Abundant

in some places on chalk: more rare in moist hedges. About Edinburgh; and near Passage in Ireland. ♄. 6, 7.

14. R. *sépium* "Thuil." (*small-leaved S.*); prickles numerous, larger curved, smaller subulate; leaflets small doubly serrate hairy acute at each end glandulose beneath, calyx-segments and pinnæ elongated, fruit ovate? *Borr. in E. B. S.* t. 2653.

Near Bridport, Warwickshire. Heyford Leys, near Upper Heyford, Oxfordshire. ♄. 6, 7.

†† *Leaves eglandulose.*

‡ *Styles distinct, included or nearly so.*

15. R. *canína* L. (*common D.*); prickles uniform hooked, leaves naked or slightly hairy, their disk englandulose, calyx-segments fully pinnate deciduous, styles not united, shoots assurgent. — *α.* leaflets naked, carinate, serratures simple. *E. B.* t. 992. — *β.* leaflets naked, carinate, serratures compound. R. sarmentacea *Woods: E. B. S.* t. 2595. — *γ.* leaflets naked flat, serratures simple. R. surculosa *Woods.* — *δ.* leaflets more or less hairy flat. R. dumetorum *Thuill: E. B. S.* t. 2610. — *ε.* leaflets more or less hairy not flat. R. Forsteri *Sm.; E. B. S.* t. 2611.

Thickets, hedges, &c., very common. ♄. 6, 7.

16. R. *bractescens* Woods (*bracteated D.*); calyx-tube globose, prickles hooked, leaflets simply serrate downy beneath bracteas overtopping the fruit.

About Ulverston, Lancashire; and Ambleside, Westmoreland. ♄. 6, 7. — Apparently a mere variety of the last.

17. R. *cæ'sia* Sm. (*glaucous D.*); prickles uniform uncinate, leaflets doubly serrate downy, their disk eglandulose, calyx sparingly pinnate, styles not united, shoots assurgent. *E. B.* t. 2367. — *β. incana*, prickles strongly uncinate from a much-lengthened base, fruit large oblong.

Highland valleys of Perthshire and Argyleshire. Northumberland and Durham. *β.* sent from Scotland to Mr. Sabine. ♄. 6, 7. — We do not distinguish this from *R. canina.*

‡‡ *Styles united in a column, mostly exserted.*

18. R. *sýstyla* Woods (*close-styled D.*); prickles uniform uncinate, leaves simply serrate, their disk eglandulose, calyx-segments sparingly pinnate deciduous, styles united hairless, shoots assurgent. R. collina *E. B.* t. 1895 (*excl. syn.*)

Thickets, hedges, &c. Sussex, Essex, Middlesex, Berkshire, Kent. Niddrie; hills to the north of Milngavie; and Fort Augustus; Scotland. Near Cork. ♄. 6, 7.

19. R. *arvénsis* Huds. (*trailing D.*); prickles uncinate, those

of the ramuli feeble, leaves simply serrate deciduous (glaucescent beneath), their disk eglandulose, calyx-segments sparingly pinnate deciduous, styles united hairless, shoots trailing. *E. B.* t. 188.

Woods, hedges, thickets, &c.; common in England, but rare in the mountainous districts. Lowlands of Scotland. Near Bray, Ireland. ♄. 6, 7. — This is distinguished from all the other British species by its trailing habit; and from *R. systyla*, so far as we can see, by that character alone. It is frequently cultivated under the name of *Ayrshire Rose;* but the true one (*R. capreolata* Neill) has, we believe, the column of styles slightly hairy and shining leaves, and is considered by Sabine a deciduous *var.* of *R. sempervirens*, although it is mere probably a hybrid between that species and *R. arvensis.*

SUB-ORD. III. POMEÆ *Lindl. Fruit consisting of several united carpels adhering by their back to the inside of the calyx-tube and forming an inferior* 1—5*-celled pome, the cells lined with a cartilaginous or bony substance. Seeds* 1 *or more, ascending. Petals several. — Trees or shrubs. Leaves alternate, simple or divided, with free stipules. Flowers in terminal cymes, white or pink.* (Gen. 16—18.)

15. MÉSPILUS *Linn.* Medlar.

Cal. segments large, foliaceous. *Pet.* large, roundish. *Disk* large, secreting much honey. *Styles* 2—5, glabrous. *Fruit* turbinate, with the upper ends of the cells, which are bony, exposed. — Named from μεσπιλη, the Greek word for *Medlar.*

1. M.* *Germánica* L. (*common M.*); leaves lanceolate a little downy, flowers solitary nearly sessile terminal, styles 5. *E. B.* t. 1523.

Hedges, in Cheshire and Sussex. Bidborough, Kent. Red-hill, Surrey; and, in its wild thorny state, in a hedge, between Reigate and Nutfield. Jersey. ♄. 5, 6.

16. CRATÆ'GUS *Linn.* Hawthorn.

Cal. segments short, acute. *Pet.* large, roundish. *Styles* 1—5. *Fruit* oval or round, concealing the upper end of the cells, which are bony. *Lindl.* — Named from κρατος, *strength*, in allusion to the extreme hardness of the wood.

1. C. *Oxyacántha* L. (*Hawthorn, White-thorn*, or *May*); spiny, leaves glabrous cut into 3 or 5 deeply serrate segments cuneate at the base, flowers corymbose, calyx not glandular, styles 1—3. *E. B.* t. 2504. C. monogyna *Jacq.*

Woods and hedges. ♄. 5, 6. — Variable in the form of its *leaves*, in the downiness of the *cal.*, and in the colour of the *flower* and *fruit.*

17. Cotoneáster *Lindl.* Cotoneaster.

Flowers polygamous. *Cal.* turbinate, with 5 short teeth. *Pet.* 5, small, erect. *Stam.* erect, the length of the teeth of the cal. *Fruit* turbinate, with its nuts adhering to the inside of the cal., but not cohering in the centre. — Named from *Cotoneum* (κυδώνιον, Gr.), the *Quince.*

1. C. *vulgáris* Lindl. (*common C.*); leaves oval, calyx glabrous except at the margin, peduncles slightly downy. *E. B. S.* t. 2713.

Limestone cliffs at Ormeshead, Caernarvonshire. ♄. 5, 6.

18. Pýrus *Linn.* Pear. Apple. Service.

Cal. of 5 small segments. *Pet.* 5, large, roundish. *Styles* 2—5. *Fruit* fleshy, with 5 cartilaginous or coriaceous 2-seeded cells. — Name derived from the Celtic *peren*, or Gaelic *peur*, a *pear*; but more immediately, on account of its shape, from πυρ, *flame*; which, as well as the origin of *fir*-tree, may arise from the ancient polyglot vocable *ar*, *er*, *or*, or *ur*, denoting *light* or *flame.*

1. P. *communis* L. (*wild P.*); leaves simple ovate serrate, peduncles corymbose, fruit turbinate, styles distinct. *E. B.* t. 1784.

Woods and hedges. ♄. 4, 5. — Origin of our *Pear.*

2. P. *Málus* L. (*Crab A.*); leaves ovate acute serrate, flowers in a sessile umbel, styles combined below, fruit globose. *E. B.* t. 179.

Woods and hedges. ♄. 5. — *Fruit* austere, of which verjuice is made. — Origin of our *Apple*, a word derived from the Celtic *ball*, a *round body*; whence also *abhall* in Gaelic, and *apfel* in German.

3. P. *torminális* Sm. (*wild S.*); leaves ovate or cordate lobed and serrate, lower lobes larger and spreading, peduncles corymbose. Cratægus *L.*: *E. B.* t. 298.

Woods and hedges, chiefly in the middle and south of England. ♄. 5, 6. — Young *leaves* pubescent or tomentose beneath, old ones almost glabrous. *Flowers* rather large, white. *Fruit* small, greenish-brown, spotted.

4. P. *doméstica* Sm. (*true S.*); leaves pinnate downy beneath, leaflets serrate upwards, flowers panicled, fruit (large) obovate. *E. B.* t. 350. Sorbus *L.*

Solitary tree in Wyre Forest, near Bewdley, Worcestershire. ♄. 5. — Segments of the *calyx* recurved after flowering. *Styles* jointed, woolly to the apex. Habit of the following; but differing in its rather larger *flowers* and the much larger *fruit*, which resembles a small pear, an inch long, with a horny lining to the cells. The *inflorescence*, too, although sometimes short and broad, is never a true corymb; but the chief character lies in the fruit.

5. P. *aucupária* Gærtn. (*Mountain-ash* or *Rowan-tree*); leaves pinnate usually glabrous when old, leaflets serrate, flowers corymbose, fruit (small) globose. Scrbus *E. B.* t. 337.

Mountainous woods and hedges, frequent, especially in the Highlands of Scotland. ♄. 5, 6. — The cells of the fruit are coriaceous and flexible in this and the next.

6. P. *A'ria* Sm. (*white Beam-tree*); leaves somewhat ovate serrate cut or pinnatifid or partly pinnate white and downy beneath, flowers corymbose, fruit globose. — *α.* "leaves oval or oblong unequally and doubly serrate or slightly lobed towards the end, nearly entire below." *E. B.* t. 1858. — *β.* leaves oblong doubly serrate near the apex pinnatifid below, pinnæ lanceolate oblong serrate the two lowermost distinct." P. pinnatifida *Sm. E. B.* t. 2331. P. Fennica *Bab.* — *γ.* "leaves broad lobed, lobes triangular oval toothed deepest towards the middle of each side of the leaf." P. Scandica *Bab.*

Mountainous woods, especially in a chalk or limestone country; England and Scotland, Cunnamara and Killarney, Ireland. *β.* Isle of Arran, Scotland. *γ.* Cliffs at Minehead and N. Devon. ♄. 5, 6. — *Fruit* red, rather larger than the last. There is a general character about all the above varieties which to us links them together; but as Mr. Babington has come to an opposite conclusion, and as we have not specimens of his *P. Scandica*, we quote from him the only differences that are indicated.

Ord. XXVIII. ONAGRACEÆ *Juss.*

Calyx-tube adnate with the *ovary* entirely or in part; *limb* 2- or generally 4-lobed, the lobes valvate in æstivation. *Petals* 2, generally 4, twisted in æstivation, arising from the mouth of the calyx. *Stamens* inserted into the calyx, and twice as many as its lobes, or fewer. *Ovary* of 2—4 cells, often crowned by a disk. *Style* filiform; *stigma* capitate or lobed. *Fruit* a berry, or dry and usually dehiscent. *Seeds* without albumen. — Herbs *or* Shrubs. Leaves *frequently opposite.*

1. Epilobium. Stam. 8. Cal.-limb divided nearly to the base, deciduous. Seeds many, with a tuft of hairs.
2. Œnothera. Stam. 8. Cal.-limb tubular at the base, deciduous. Seeds many, naked.
3. Isnardia. Stam. 4. Cal.-limb 4-parted, persistent. Seeds many, naked.
4. Circæa. Stam. 2. Seeds 1—2.

1. Epilóbium *Linn.* Willow-herb.

Cal.-limb deciduous, 4-partite or nearly so. *Pet.* 4. *Stam.* 8. *Capsule* elongated 4-celled, 4-valved, many-seeded. *Seeds* with a tuft of hairs at one extremity. — Named from επι, *upon*, and

λοβος, a *pod*; the flower being placed upon the top of the elongated seed-vessel.

* *Flowers irregular. Stamens and style bent down. Cal.-limb 4-partite.*

1. E. *angustifólium* L. (*Rose-bay W.*); leaves scattered lanceolate or linear-lanceolate veined glabrous, flowers irregular subspicate, pedicels free from the bractea, stamens declined. — *α.* flowers larger, capsule scarcely an inch long spreading. *E. B.* t. 1947. — *β.* flowers smaller, capsule about 2½ inches long linear erect. E. macrocarpum *Steph. in Ann. Nat. Hist.* viii. 170.

Moist banks and margins of woods; rare in England, less so in Scotland. Near Enniskerry, Ireland. 4. 7. — *Stems* 4—6 feet high. Whole plant very handsome. The *var. α.* is that common in gardens, and rarely produces seed.

[We possess specimens of *E. angustissimum* of Curtis, the *E. rosmarinifolium* of Haenke, said to be collected in Glen Tilt, Scotland, by Mr. J. Robertson; if this be afterwards verified, the species may be easily recognized by the linear veinless obsoletely toothed leaves which are revolute at the margin, the pedicel combined for some way with the stalk of the bractea, and by the declined stamens.]

** *Flowers regular. Stamens and styles erect. Stigmas 4-cleft. Cal.-limb cleft down to its short campanulate base.*

2. E. *hirsútum* L. (*great hairy W.*); creeping, leaves semi-amplexicaul ovate-lanceolate deeply serrate hairy, stem very much branched hairy, flower-buds mucronate, stigma 4-cleft. *E. B.* t. 838.

Sides of ditches, rivers, and lakes, frequent. 4. 7, 8. — Almost equal in size to the last. *Root* perennial. *Flowers* corymbose, large.

3. E. *parviflórum* Schreb. (*small-flowered hairy W.*); leaves sessile lanceolate slightly toothed downy on both sides, stem nearly simple very downy or nearly glabrous, root fibrous, flower-buds obtuse, stigma 4-cleft. *E. B.* t. 795.

Marshes and banks of lakes and rivers, frequent. 4. 7, 8. — The much smaller size of this species in all its parts, being scarcely more than 1—1½ ft. high, besides the above characters, serves to distinguish it from the preceding, with which it has been confounded.

4. E. *montánum* L. (*broad smooth-leaved W.*); leaves shortly stalked ovate-oblong acute rounded at the base glabrous all toothed, stem rounded pubescent as well as the fruit, stigma 4-cleft, root fibrous, scions none. *E. B.* t. 1177.

Dry shady banks, walls, roofs of cottages, &c., frequent. 4. 6, 7. — *Stem* 6 inches to 1 ft. high. Much resembling *E. roseum*; but distinguished by its 4-fid *stigma*: it has, too, usually more shortly petiolate, deeply toothed *leaves*; and larger *flowers*.

5. E. *lanceolátum* Seb. et Maur. (*spear-leaved W.*); "leaves stalked lanceolate irregularly toothed, stem obscurely angular, stigma slightly lobed, root fibrous, scions none." *Borr. E. B. S.* t. 2935.

Near Tintern, Monmouthshire; and near Bristol. 4. 7—9.—Almost intermediate between *E. montanum* and *E. roseum:* it seems to be *E. roseum* of some Swiss collectors, and to be comprehended by Seringe in De Candolle's Prodr. along with *E. roseum* Schreb. (not DC.) under his character of *E. montanum.* It differs from *E. montanum* by the lobes of the *stigma*, erect stalked *leaves*, and a tendency towards an angular *stem;* and from *E. roseum* by the more decided lobes to the *stigma*, and *stem* less angular; but it is perhaps a mere variety of this last.

**** Flowers regular, stamens erect, stigma undivided or nearly so.*

6. E. *roseum* Schreb. (*pale smooth-leaved W.*); leaves ovate-lanceolate stalked finely toothed, stem erect with two sharp and two obscure angles, stigma undivided or slightly lobed, root fibrous. *E. B.* t. 693.

About London; in Essex, Sussex and Hants, Forfarshire and Moray. 4. 7, 8. — *Scions* none, or in autumn short, with a rosulate tuft of leaves. Distinguished from *E. montanum* by its clavate *stigma*, stalked *leaves*, and slightly angled *stem;* and from *E. tetragonum* by the broader *leaves* which are stalked, and *stem* not so distinctly 4-angled.

7. E. *tetragónum* L. (*square-stalked W.*); leaves lanceolate sessile denticulate, stem with 2—4 angles, stigma undivided, flower-buds erect, seeds oblong-obovate. *E. B.* t. 1948. E. virgatum *Fries.* E. Lamyi *Schult?*

Sides of ditches and watery places, common. 4. 7, 8.—In the genuine forms of the species the scions are short and terminate in a rose-shaped tuft of leaves. In what is called *E. virgatum* the scions are elongated with scattered leaves, and in *E. Lamyi* Schultz there are none; as to the two last, we have observed them close together, the first in a ditch, the second on a stone and lime wall, and in this instance the want of scions was caused by situation: other circumstances may cause them to disappear elsewhere.

8. E. *palústre* L. (*narrow-leaved Marsh W.*); leaves narrow-lanceolate sessile nearly entire and as well as the rounded erect stem subglabrous, stigma undivided, root with filiform scions, flower-buds drooping, seeds fusiform. *E. B.* t. 346.

Boggy places and the sides of lakes and ditches. 4. 7, 8.—About a foot high. *Scions* elongated with scattered leaves. *Flowers* small.

9. E. *alsinifólium* Vill. (*Chickweed-leaved W.*); leaves lucid ovate-acuminate nearly sessile glabrous, lowermost ones entire, the rest toothed, stem rounded, its upper part and germen

slightly pubescent, stigma entire, root with elongated scions with scattered leaves. *E. B.* t. 2000.

Sides of alpine rivulets. On the Cheviots. Aber waterfall, N. Wales. Frequent on the Scottish, especially the Highland, mountains. 4. 7.—This has many of the characters, in its *leaves* and *stem*, of *E. montanum* and *E. roseum*; but the *leaves* have a flaccid subpellucid appearance, and the stem is stoloniferous, so that the eye readily distinguishes the species.

10. E. *alpínum* L. (*alpine W.*); leaves elliptical glabrous on short foot-stalks nearly entire, stem nearly glabrous and fruit entirely so, stigma undivided. *E. B.* t. 2001.

Wet places near springs, and by the sides of rivulets on all the Highland mountains. 4. 7.—*Stem* 2—4 inches high. *Root* with scions, which are either short with a tuft of leaves or elongated with scattered leaves. *Stem* with two lines of very obscure pubescence, procumbent at the base. *Flowers* seldom more than 1 or 2 from the summit of the stalk, at first gracefully drooping, bright purple-red. *Fruit* erect, often as long as the plant itself.

2. Œnothéra *Linn.* Evening-Primrose.

Cal.-limb deciduous, tubular at the base, deeply 4-cleft upwards; the segments reflexed, more or less combined. *Pet.* 4. *Stam.* 8. *Caps.* 4-valved, with many naked *seeds*.—Named from οινος, *wine*, and θηρα, *searching* or *catching*, from the root having caught the perfume of wine.

1. Œ. **biénnis* L. (*common E.*); leaves ovate-lanceolate toothed, stem somewhat hairy, flowers sessile subspicate, stamens about as long as the corolla, capsules nearly cylindrical 4-toothed. *E. B.* t. 1534.

Sandy soils near Liverpool, also in Suffolk and Warwickshire. ♂. 7—9.—This genus is altogether American. Plant 2—3 feet high. *Stem* roughish. *Flowers* yellow, fragrant, expanding in the evening.

3. Isnárdia *Linn.* Isnardia.

Cal.-limb 4-partite, permanent. *Pet.* 4, or wanting. *Stam.* 4. *Stigma* capitate. *Caps.* obovate or cylindrical, 4-celled, nearly dehiscent, many-seeded. *Seeds* naked.—Named after *Antoine d'Isnard*, a botanist and professor at Paris, in the beginning of the last century.—As the genus is defined here it includes *Ludwigia*.

1. I. *palústris* L. (*Marsh I.*); stem procumbent rooting glabrous, leaves opposite ovate acute stalked, flowers axillary solitary sessile apetalous, capsule obovate 4-angled. *E. B. S.* t. 2593.

South of England, very rare. In a pool at Buxtead, Sussex. Abundant in a bog on Petersfield Heath; also near Brockenhurst, Hants.

Jersey. ☉. 6, 7. — Detected by *Mr. Goodyer* on Petersfield Heath, previous to 1667, but lost sight of until rediscovered in Sussex, by *Mr. Borrer*, in 1827. It is frequent on the continent of Europe, in N. America, and the temperate parts of Asia.

4. Circæ'a *Linn.* Enchanter's Nightshade.

Cal.-limb deciduous shortly tubular at the base, deeply 2-cleft upwards. *Cor.* of 2 petals. *Stam.* 2. *Ovary* 1—2-celled *ovules* solitary in each cell, erect. *Stigma* 2-lobed. *Caps.* hispid with hooked hairs, scarcely dehiscent, 1—2-celled; cells 1-seeded. — Named from the enchantress *Circe*, either from the prettiness of its flowers, or, as some say, from its growing in damp shady places, where plants used for incantations are found.

1. C. *Lutetiána* L. (*common E.*); stem erect pubescent, leaves ovate acuminate slightly repand toothed usually longer than the petiole, bracts none, ovary globose 2-celled at length broadly obovate. *E. B.* t. 1056.

Woods and coppices in shady situations, common. 4. 6—8. — *Root* creeping. *Stem* 1—1½ ft. high. *Leaves* scarcely cordate at the base, upper ones narrow-ovate. — The only certain character between this and the next is afforded by the structure of the ovary, as first pointed out by Dr. Wight; that giving it the difference of external form: but even this is diminished in value by the 2-lobed stigma, indicating a tendency to produce the second cell also, in the ovary of *C. alpina*. The nectary which surrounds the base of the filament is a little more prominent than in the following species.

2. C. *alpína* L. (*alpine E.*); stem ascending nearly glabrous, leaves cordate toothed shining as long as the petioles, pedicels subtended by minute setaceous bracts, ovary 1-celled at length inversely oblong. *E. B.* t. 1057.

Woods, coppices, and stony places, especially by the sides of lakes in the north of England and Scotland. 4. 7, 8. — This is very near to the preceding; but is usually much smaller and with a narrower ovary and fruit. Mature *fruit*, which is abundant on *C. Lutetiana*, we have seldom observed on this plant. What is called *C. intermedia* sometimes belongs to the present species, sometimes to the last.

Ord. XXIX. HALORAGACEÆ *R. Brown.*

Calyx-tube adnate with the *ovary*; *limb* of fertile flowers minute, 3—4-partite or wanting. *Petals* present or wanting. *Stamens* equal in number to the lobes of the calyx, or double as many, rarely fewer. *Ovary* with 1—4 cells; *ovules* solitary pendulous. *Stigmas* as many as there are cells, papillose or penicilliform. *Fruit* dry, indehiscent, 1—4-celled, or composed

of 4 indehiscent carpels slightly cohering by their inner angles and eventually separating. *Seeds* solitary, pendulous. *Albumen* fleshy, sometimes very thin. *Embryo* straight. *Radicle* superior.—*Mostly* Herbs (*the British ones especially*), aquatics. Leaves *various as to insertion. The* stamens *and* pistils *often separated; the former are then inserted with the petals into the base of the calyx.*

1. HIPPURIS. Stam. 1. Stigma 1. Fruit 1-seeded.
2. MYRIOPHYLLUM. Monœcious. Stam. 4—1. Stigmas 4. Fruit 4-seeded.

1. HIPPÚRIS *Linn.* Mare's Tail.

Perianth single, superior, forming a very indistinct rim to the germen. *Stam.* 1. *Style* 1. *Fruit* 1-celled, 1-seeded.—Named from ἱππος, *a horse*, and ουρα, *a tail.*

1. H. *vulgáris* L. (*common M.*); leaves linear 6—8 or 10 in a whorl. *E. B.* t. 763.

Ditches and, usually, stagnant waters; less frequent in Scotland. ♃. 6, 7.—*Stem* erect, simple, jointed. *Whorls* of about 8 *leaves*, which are callous at the point. *Flowers* at the base of each of the upper leaves, not unfrequently destitute of stamens. In deep streams of water this plant attains to 2 or 3 feet, with the leaves excessively crowded, 3 and even 4 inches in length, pellucid, with an opaque nerve, their points not callous; the whole plant submerged and barren.

2. MYRIOPHÝLLUM *Linn.* Water-Milfoil.

Monœcious. *Barren fl. Cal.* inferior, of 4 leaves. *Pet.* 4. *Stam.* 4—8.—*Fertile fl. Cal.* 4-lobed. *Pet.* 4. *Stam.* 4—8, or wanting. *Stigmas* 4, sessile. *Fruit* of 4, sessile, subglobose, 1-seeded carpels, at length separating.—Name μυριος, a *myriad*, and φυλλον, a *leaf*, from its numerous leaves.

1. M. *verticillátum* L. (*whorled W.*); flowers all whorled subtended by pinnatifid or pectinate bracts longer than the flowers. *E. B.* t. 218. M. pectinatum *DC.*

Ponds and ditches throughout England and Wales. ♃. 7, 8.—Bracteas variable in length; when many times longer than the flowers, it is *M. verticillatum* DC.; when only 2—3 times as long, it is *M. pectinatum* DC. But between these there are intermediate forms.

2. M. *spicátum* L. (*spiked W.*); flowers all whorled longer than but subtended by bracts forming an interrupted leafless spike. *E. B.* t. 83.

Ditches and stagnant waters, common. ♃. 6, 7.—*Stems* slender, much branched. *Leaves* 4 in a whorl, finely pectinated and always submerged. *Spikes* slender, 3—5 inches long, erect when in bud. *Bracts* small, lower ones pectinate, upper ovate and entire. This only differs from some forms of the last by the still shorter bracteas.

3. M. *alterniflorum* D C. (*alternate-flowered W.*); sterile flowers mostly alternate on an erect leafless spike, fertile ones 1—4 in the axils of pectinated leaves at the base of the spike. *E. B. S.* t. 2854.

Ponds and ditches in many places, in England, Jersey, and Scotland. ♃. 5—8. — Very near the preceding, it must be confessed, or, as it were, intermediate between it and *M. verticillatum.* Dr. Bromfield considers the leaves to be always 3 in a whorl, not 4; but they are not so represented in *E. Bot.* *Spikes* drooping when in bud.

Ord. XXX. LYTHRACEÆ *Juss.*

Calyx of 1 piece, free, persistent, the lobes varying in number valvate or distant in æstivation, often with intermediate teeth. *Petals* inserted upon the calyx between its lobes, caducous, sometimes 0. *Stamens* inserted within the tube of the calyx, equal to, or double or triple the number of petals. *Ovary* 1, superior. *Style* 1; *stigma* usually capitate. *Capsule* membranous, 2—4-celled, opening longitudinally or irregularly. *Seeds* numerous, without *albumen*, on an axile placenta. — Herbs, *with usually opposite leaves, without stipules:* flowers *axillary or racemose or spiked.* — Properties astringent. *Henna* of Egypt is extracted from *Lawsonia inermis.*

1. Lythrum. Calyx tubular.
2. Peplis. Calyx campanulate.

1. Lýthrum *Linn.* Purple-Loosestrife.

Cal. inferior, tubular, with 8—12 teeth, the alternate ones subulate. *Petals* 4—6. *Stam.* as many as, or twice as many as the petals. *Style* filiform. *Capsule* 2-celled. — Name, λυθρον, *blood*, — it is said from the red colour of the flowers.

1. L. *Salicária* L. (*spiked P.*); leaves opposite lanceolate cordate at the base, flowers in whorled leafy spikes with 12 stamens, bracts none. *E. B.* t. 1061.

Watery and marshy places, frequent. ♃. 7—9. — *Stems* 2—3 ft. high, erect, 4-sided. *Spikes* very long, of beautiful purple *flowers.* *Cal.* striate, the subulate teeth twice as long as the others. *Pet.* oblong, cuneiform. *Stam.* 6 long and 6 short. *Style* varying in length.

2. L. *hyssopifólium* L. (*hyssop-leaved P.*); leaves mostly alternate linear-lanceolate obtuse, flowers axillary solitary, bracts 2 minute subulate, stamens about 6. *E B.* t. 292.

Moist and occasionally inundated places, chiefly in the east of England. ☉. 6—10. — A humble annual, 4—6 inches high, with small axillary *flowers.* *Cal.-teeth* all short.

2. Péplis *Linn.* Water-Purslane.

Cal. companulate, with 6 large and 6 alternating small teeth. *Pet.* 6, often wanting. *Stam.* 6. *Style* very short. *Caps.* 2-celled.—Named from πεπλιον, anciently applied to the genus *Portulaca*, now to one somewhat similar in habit.

1. P. *Pórtula* L. (*common W.*); flowers axillary solitary, leaves obovate. *E. B.* t. 1211.

Watery places, not unfrequent. ☉. 7, 8.—*Plant* prostrate, 5—6 inches long, creeping, little branched. *Leaves* opposite, glabrous, tapering at the base.

Ord. XXXI. TAMARICACEÆ *Desv.*

Calyx 4—5-partite, persistent, free, with an imbricative æstivation. *Petals* 4—5, from the base of the calyx, marcescent. *Stamens* inserted into the margin of a scutelliform disk, equal in number to the petals, or twice as many. *Ovary* superior, 1-celled. *Styles* about 3, or none. *Stigmas* 3, or united. *Capsule* 3-gonal, 3-valved, 1-celled, with many comose *seeds* on three placentas, at the base of the cell along the middle of the valves. *Albumen* 0.—Shrubs, *with twiggy branches and small scale-like leaves. Tamarix Gallica* and *Africana* yield sulphate of soda: the former, or a variety of it, also affords, according to Ehrenberg, the *Manna* of Mount Sinai.

1. Támarix *Linn.* Tamarisk.

Stam. equal, distinct. *Stigmas* distinct, sessile, feathery. *Caps.* 1-celled, 3-valved, many-seeded. *Seeds* without a beak, pappose.—Named from the *Tamarici*, a people who inhabited the banks of the Tamaris, now *Tambra*, in Spain, where the Tamarisk abounds.

1. T. **A'nglica* Webb (*English T.*); leaves quite glabrous somewhat narrowed at the base, flower-buds ovate, angles of the disk 5 acute tapering into the five filaments and then ovate apiculate, capsule rounded at the base abruptly narrowed upwards. T. Gallica *L.*: *E. B.* t. 1318.

Rocks, cliffs, and sandy shores by the sea, about the Lizard and St. Michael's, Cornwall; Hurst Castle and Hastings. Near Landguard Fort; but evidently planted. "Planted no doubt everywhere." *Mr. Borrer.* ♄. 7. — *Leaves* minute, amplexicaul, appressed, acute. *Spikes* lateral, somewhat panicled, slender, much longer than broad.

Ord. XXXII. CUCURBITACEÆ[1] *Juss.*

Frequently monœcious or diœcious. *Calyx* 5-toothed, the tube adnate with the ovary. *Corolla* 5-cleft, often scarcely

[1] From the corolla being gamopetalous, this is artificially near *Caprifoliaceæ*;

distinguishable from the calyx, frequently reticulated. *Stamens* 5, often more or less cohering. *Ovary* 1-celled, inferior, with 3 parietal receptacles. *Style* short. *Stigmas* lobed. *Fruit* fleshy. *Seeds* flat, in a juicy *aril*. *Embryo* flat. *Albumen* 0. *Cotyledons* foliaceous, nerved.— *Succulent climbing* plants, *with extra-axillary* tendrils (*in the place of a* stipule), *frequently scabrous*. This order contains *Cucurbita*, the *Gourd*; *Ecbalium purgans*, the *Elaterium*, a powerful cathartic; *Cucumis*, the *Cucumber*, and *Melons*; *Citrullus Colocynthis*, the *Colocynth*, *bitter-apples*, or *bitter Cucumber*; *Lagenaria vulgaris*, *Bottle-gourd*, &c.; all abounding in a bitter laxative.

1. Bryónia *Linn.* Bryony.

Cor. 5-cleft. *Filaments* 3-adelphous, inserted at the base of the corolla. *Anthers* 1-celled, 3-adelphous, applied to the edge or back of the connectivum, and forming a sinuous line. *Style* trifid: *stigmas* somewhat reniform or bifid. *Fruit* ovoid or globose, baccate, few-seeded.— Named from βρυω, to *shoot*, or *grow rapidly*, in allusion to the quick growth of the stems.

1. B. *dioíca* Jacq. (*red-berried B.*); leaves palmate rough on both sides, flowers diœcious. *E. B.* t. 439.

Thickets and hedges, frequent in England; not indigenous to Scotland. ♄. 5—9. — *Root* very large white and branched. *Stem* long, branched, weak, with simple *tendrils*. *Flowers* in short axillary racemes. *Cor.* whitish, with green veins. *Berries* red. The plant abounds with a fetid and acrid juice.

Ord. XXXIII. PORTULACEÆ *Juss.*

Sepals 2. *Petals* inserted into the base of the calyx (somewhat hypogynous), mostly 5, usually distinct, sometimes wanting. *Stamens* of uncertain number, opposite the petals when of the same number. *Ovary* superior, 1-celled. *Style* 1 *or* 0. *Stigmas* several. *Capsule* opening transversely or by 3 valves. *Seeds* numerous on a central receptacle. *Albumen* farinaceous, surrounded by the curved *embryo*.— *Succulent* Herbs *or* Shrubs. *Portulaca sativa* is the *Purslane*.

1. Móntia *Linn.* Blinks.

Cor. of 5 irregular petals, somewhat hypogynous, united at the base into one split up in front. *Stam.* 3, inserted upon the *corolla* and opposite to its smaller segments. *Stigmas* 3, almost sessile. *Caps.* 3-valved, 3-seeded.— Named in honour of

but it is naturally nearer *Passifloraceæ*, which has distinct petals. Some botanists consider the calyx a bract, the corolla as the calyx, and remove this to Monochlamydeæ.

Joseph de Monti, a professor of Botany and Nat. History at Bologna.

1. M. *fontána* L. (*Water B.* or *Chickweed*). *E. B.* t. 1206.

Rills, springy and wet places. ⊙. 4—8. — Whole plant succulent, varying considerably in size. *Leaves* small, opposite, spathulate. *Flowers* white, at first drooping. *Seeds* 3, subreniform, dotted.

Ord. XXXIV. PARONYCHIACEÆ *St. Hill.*

Sepals 5 (rarely 3 or 4), more or less cohering at the base. *Petals* minute, alternating with the lobes of the calyx, or 0. *Stamens* inserted into the base of the calyx (somewhat hypogynous), and opposite to its lobes when as many. *Ovary* superior. *Styles* 2—5. *Fruit* small, dry, 1-celled, 1—5 valved, or indehiscent. *Seeds* numerous on a free central receptacle, or solitary and suspended from a long stalk arising from the base of the cell.— *Small branching* herbaceous *or* suffruticose plants, *with sessile entire* leaves *and membranaceous stipules.*— An Order closely allied in many respects to Caryophyllaceæ, as also to Amaranthaceæ and Chenopodiaceæ, and, like these two, having frequently a single perianth.

* *Fruit* 1-*seeded.*

1. Corrigiola. Fruit indehiscent. Petals oblong. Leaves alternate.
2. Herniaria. Fruit indehiscent. Sepals herbaceous flat. Petals filiform. Leaves opposite.
3. Illecebrum. Fruit splitting into valves. Sepals cartilaginous cucullate. Petals 0 or subulate. Leaves opposite.

** *Fruit, a several-seeded capsule.*

4. Polycarpon. Sepals keeled at the back, subcucullate at the apex. Petals small, narrow, emarginate. Styles 3.
5. Spergularia. Sepals flat. Petals ovate, entire, as large as the calyx. Styles usually 3.
6. Spergula. Petals ovate, entire, as large as the calyx. Styles 5, alternate with the sepals.

1. Corrigíola *Linn.* Strapwort.

Cal. 5-partite, permanent. *Pet.* 5, oblong, about the length of the calyx. *Stam.* 5. *Styles* 3. *Fruit* indehiscent, 1-seeded. Leaves *alternate.* — Named from *corrigia*, a *strap*, or *thong*; formerly applied to the *Polygonum aviculare* on account of its long pliant stems: and now to a plant which is somewhat similar to it in habit.

1. C. *littorális* L. (*Sand S.*); stem leafy among the flowers. *E. B.* t. 668.

Rare; on the south-western coast of England. On Slapham sands and near the Star-point, Devon; and at Helston, Cornwall. ⊙.

7, 8. — *Stems* numerous from the top of the root, spreading, slender. *Leaves* linear obtuse, somewhat fleshy and very glaucous. *Flowers* small.

2. Herniária *Linn.* Rupture-wort.

Cal. 5-partite, permanent. *Pet.* 5, filiform, resembling sterile stamens, and inserted with them. *Stam.* 5, inserted upon a fleshy disk. *Stigmas* 2, nearly sessile. *Fruit* indehiscent, 1-seeded. Leaves *opposite.* — Named from the plant having been supposed to be useful in the cure of *Hernia.*

1. H. *glábra* L. (*glabrous R.*); stems prostrate herbaceous clothed with minute decurved hairs woody in the base in age, leaves oval a little tapering at the base nearly glabrous or ciliate and more or less hairy, clusters of sessile flowers axillary, calyx glabrous or with small hairs.—*α.* leaves quite glabrous. *E. B.* t. 206.—*β.* leaves ciliated and sometimes with hairs on the surface. H. glabra *β. Bab.* H. ciliata *Bab.*: *E. B. S.* t. 2857.

Near Newmarket, Lizard, Cornwall, and in some other of the southern counties of England. Jersey and Guernsey. Western part of Kerry, Ireland. ♃. 7, 8. — The Lizard affords both the glabrous and hairy states of this variable plant; and there is every gradation in the inflorescence between it and the *H. ciliata.* In general even the most glabrous states more resemble Mr. Babington's figure of *H. ciliata*, than Smith's figure of *H. glabra*, which represents an undeveloped state of the plant.

2. H. **hirsúta* L. (*hairy R.*); stems herbaceous prostrate clothed with patent hairs, leaves oval oblong, clusters of sessile flowers axillary, calyx hairy. *E. B.* t. 1379?

Sandy ground near Barnet; *Hudson.* ♄. 7, 8. — Messrs. Milne and Gordon, in their *Indigen. Bot.* i. 455, say, "We found it in a field at Finchley and at Colney Hatch, near Barnet, where Hudson found it," but as Mr. Babington has ascertained the Finchley plant to be *H. glabra*, it is also probable that Hudson's one was the hairy state of that species which is often cultivated under the name of *H. hirsuta*, and to which Smith's Cornish specimens belong. What was intended by the figure in *E. Bot.* it is difficult to say.

3. Illécebrum *Linn.* Knot-grass.

Sep. 5, permanent, cartilaginous, cucullate, with an awl-shaped point, at the back below the apex. *Pet.* 0, or reduced to 5 subulate *scales.* *Stam.* 5. *Stigmas* 2, nearly sessile. *Caps.* 1-seeded, irregularly 5- or 10-valved. Leaves *opposite.* — Name: *illecebra*, an *enticement* or *attraction*, anciently given to a showy tribe of plants, now confined to a genus possessing few charms.

1. I. *verticillátum* L. (*whorled K.*). *E. B.* t. 895.

Marshy or boggy ground, in Devonshire and Cornwall. 4. 7. — A small plant with spreading procumbent filiform glabrous *stems;* broadly ovate *leaves*, white scariose *stipules* jagged at the margin; and numerous *flowers* in axillary whorls, the *calyx* of which is white, very cartilaginous, and rounded at the base.

4. Polycárpon *Linn.* All-seed.

Sep. 5, keeled at the back, subcucullate at the apex. *Pet.* 5, shorter than the calyx, emarginate. *Stam.* 3—5. *Styles* 3, very short. *Caps.* 3-valved, many-seeded. — Named from πολυς, *many*, and καρπος, *fruit;* applied by the ancients to the *Polygonum aviculare*, to which the present genus is somewhat similar.

1. P. *tetraphýllum* L. (*four-leaved A.*); triandrous, sepals mucronate, petals notched, leaves spathulate-obovate, those of the stem usually in fours, of the branches opposite. *E. B.* t. 1031.

Southern coasts of England: particularly Devonshire, Dorsetshire, Cornwall, and Glamorganshire. Jersey and Guernsey. ☉. 6, 7.

5. Spergulária *Pers.* Sandwort-Spurrey.

Sep. 5, flattish. *Pet.* 5, ovate, entire, about as long as the calyx. *Stam.* 5—10, or fewer. *Styles* usually 3 (3—5). *Caps.* many-seeded, with entire valves fewer than the sepals or as many and alternate with them.— Named from the resemblance to the next genus.

1. S. *rúbra* St. Hill. (*Field S.*); stems prostrate, leaves narrow-linear acute plane scarcely fleshy tipped with a short bristle, stipules ovate cloven, capsule as long as the calyx, seeds compressed angular roughish. Arenaria *L.: E. B.* t. 852. Alsine *Wahl.*

Gravelly or sandy soils, frequent. ☉. 6—9. — Much branched and spreading, *branches* often compressed upwards. *Stipules* a pair of ovate, acute, white, membranaceous *scales*, united at their base. *Flowers* numerous, in the axils of the upper leaves, solitary on rather short peduncles that are at length slightly bent back. *Sepals* obscurely 3-nerved, obtuse, and, as well as the peduncles, glandular and viscid.

2. S. *marína* Camb. (*Sea-side S.*); stems prostrate, leaves semicylindrical fleshy usually with a short point, stipules ovate cloven, capsule longer than the calyx, seeds compressed. — *α.* seeds mostly without a border, capsule a little longer than the calyx. Arenaria rubra *marina* L. — *β.* seeds mostly with a broad membranaceous striate border, capsule often twice as

long as the calyx. Arenaria media L. A. marina *Sm.* (not *Oed.*): *E. B.* t. 958. Alsine *M. et K.*

Frequent upon the sea-coast. ♂ or ♀. 6—8. Longer and stouter in all its parts than the last, and with an almost woody *root*. *Stems* and *branches* compressed, except at the base. *Leaves* varying from obtuse, with or without a point, to acute on the same specimen. We are not sure that this is specifically distinct from the last; our α. is in some measure intermediate.

6. Spérgula *Linn.* Spurrey.

Sep. 5. *Pet.* 5, as long as the calyx, ovate, entire. *Stam.* 5—10. *Styles* 5, alternate with the sepals. *Caps.* many-seeded, with entire valves opposite to the sepals.—Named from *spargo*, to *scatter*, from the seeds being widely dispersed.

1. S. *arvénsis* L. (*Corn S.*); leaves subulate linear nearly cylindrical, stipules minute, flowers panicled, seeds slightly compressed with a narrow margin tubercled or papillose. *E. B.* t. 1535. S. pentandra *Sm.*: *E. B.* t. 1536.

Corn fields, too frequent, especially on light stony soils. ☉. 6—8. *Stems* 6—12 inches high or more, swollen at the joints. *Leaves* 1—2 inches long, narrow, glabrous or pubescent, in two fascicles from each node, spreading in a whorled manner. *Petals* white, rather longer than the *calyx*. *Stamens* often 5. *Seeds* never, we believe, quite smooth as Smith describes them in his *S. pentandra*. The true *S. pentandra* L. (*Arenaria flaccida* Roxb.) is said to have been formerly found in Ireland by Sherard; but this requires confirmation: it has perfectly smooth seeds and a very broad membranous striate border, but may be merely a variety of *S. arvensis*.

Ord. XXXV. CRASSULACEÆ *De Cand.*

Sepals 3—20, more or less cohering at the base. *Petals* as many as the sepals sometimes cohering, inserted (as well as the stamens) at the base of the calyx (subhypogynous). *Stamens* as many as petals, or twice that number. *Ovaries* verticillate, as many as petals, each usually with a small flat scale or gland at its base, 1-celled, tapering into a *stigma*. *Follicles* with several seeds fixed in a double row to the ventral suture. *Albumen* fleshy thin.—Herbs *or* shrubs, *with fleshy leaves and no stipules.*

* *Stamens as many as the petals and alternating.*

1. Tillæa. Stamens 3-4.

** *Stamens twice as many as the petals or opposite to them.*

2. Cotyledon. Petals united into a tubular or campanulate corolla.
3. Sempervivum. Petals distinct or nearly so. Hypogynous glands laciniated, or toothed or wanting.
4. Sedum. Petals distinct. Hypogynous glands entire or emarginate.

1. Tillæ'a *Linn.* Tillæa.

Cal. 3—4-partite. *Pet.* distinct, acuminate. *Stam.* 3—4. *Follicles* 2-seeded, constricted in the middle. Hypogynous *glands* obscure or wanting. — Named after *Michael Angelo Tilli*, an Italian Botanist.

1. T. *muscósa* L. (*mossy T.*); stems branched and decumbent at the base, flowers axillary sessile mostly 3-cleft. *E. B.* t. 116.

On moist, barren, sandy heaths, principally in Norfolk and Suffolk, Hants and Dorsetshire. ☉. 6, 7. — A minute succulent plant, scarcely 2 inches high with small, reddish, opposite, oblong, blunt *leaves*. *Cal. leaves* mostly 3, bristle-pointed. *Petals* very small, almost subulate, white or tipped with rose colour.

2. Cotylédon *Linn.* Pennywort.

Cal. 5-partite. *Pet.* united into a tubular or campanulate *corolla*. *Stam.* 10, inserted upon the tube of the corolla. *Follicles* many-seeded, each with a scale at its base. — Named from κοτυλη, a *cup*, to which the leaves of some of the species may bear a distant resemblance.

1. C. *Umbilícus* Huds. (*Wall P.*); leaves peltate crenate depressed in the centre, stem with a (usually) simple raceme of pendulous flowers, upper bracteas minute entire, corolla scarcely cleft to the middle, lobes ovate acute erect, root tuberous. *E. B.* t. 325.

Rocks, walls, and old buildings, especially in subalpine countries. ♃. 6—8. — Whole plant succulent. *Stem* from 6 inches to a foot high. *Leaves* mostly radical. *Flowers* cylindrical, yellowish-green.

[*C. lutea* Huds., *E. B.* t. 1522, having erect flowers, patulous narrow and acuminated lobes to the corolla, and toothed bracteas, is from Portugal, and must have been introduced into the British Flora by mistake. It is by no means a hardy garden-plant.]

3. Sempervívum *Linn.* House-leek.

Cal. 6—20-cleft. *Pet.* distinct, or slightly united at the base. *Stam.* twice as many as the petals, or as many and opposite to them. *Follicles* many-seeded; hypogynous scales laciniated, toothed or none. — Name derived from *semper*, *always*, and *vivo*, to *live*; on account of its tenacity of life.

1. S. **tectórum* L. (*common H.*); leaves ciliated, off-sets spreading, petals about 12 entire and hairy at the margins. *E. B.* t. 1320.

House-tops and on walls. ♃. 7. — The *flowers* of this well-known and rustic medicinal but unquestionably not indigenous plant are no less beautiful than they are curious in their structure. The number

of *stamens* is in reality twice as many as the petals; of which those opposite to the petals are perfect; the rest, alternating, are small and abortive.

4. Sédum *Linn.* Orpine and Stonecrop.

Cal. in 4—6 deep segments, often resembling the leaves. *Pet.* 4—6, distinct, patent. *Stam.* 8—12. *Follicles* many-seeded, each with an entire or emarginate scale at its base. — Named from *sedo*, to *sit*; from these plants being seated on their native rocks with little or no earth.

** Leaves plane. Root thick.*

1. S. *Rhodíola* D C. (*Rose-root S.*); leaves obovate-oblong plane toothed glabrous, flowers (yellow) diœcious, stamens and ovaries 4, hypogynous scales emarginate as long as broad. Rhodiola rosea *L.*: *E. B.* t. 508.

Wet rocks, on the high mountains of the north of England and Ireland, and in Scotland, abundant; likewise on cliffs by the sea-shore. ♃. 6, 7. — *Root* large, woody, when dry yielding a smell that has been compared to that of *Roses*. *Stem* 6—13 inches high, simple.

2. S. *Teléphium* L. (*Live-long* or *O.*); leaves oval-oblong often cuneate at the base plane serrate, corymbs leafy dense, stems erect, flowers (purple) perfect, stamens 10. — *α.* upper leaves rounded at the base sessile. *E. B.* t. 1319. — *β.* all the leaves attenuated at the base. S. purpurascens *Link.* S. purpureum *Tausch.*

Borders of fields, hedge-banks, and waste places among bushes. ♃. 7, 8. — *Stems* 1—2 feet high, spotted. Our British specimens, especially from the North, belong principally to *β*.

*** Leaves subterete. Flowers white or reddish.*

3. S. *dasyphýllum* L. (*thick-leaved S.*); leaves opposite (except on the flowering stems) ovato-globose gibbous fleshy, panicles glutinous, petals ovate obtuse. *E. B.* t. 656.

Walls and rocks, in several parts of England. Conway, Wales. Collington woods near Edinburgh (scarcely indigenous). Cork. ♃. 6, 7. — Sterile *stems*, slender procumbent below, slightly viscid, flowering stems also procumbent, 2—3 inches high. *Leaves* short, singularly thick and fleshy, glaucous with a reddish tinge and dotted. *Flowers* white tinged with rose-colour. *Petals* and *pistils* 5—8.

4. S. *Anglicum* Huds. (*English S.*); leaves mostly alternate ovate gibbous fleshy produced at the base, cymes glabrous few-flowered, petals very sharp at the point. *E. B.* t. 171.

Rocky places, especially near the sea; most abundant in North Wales, west of Scotland, and in Ireland. ☉ 6—8. — *Stems* 2—3 inches high, much branched, both flowering and sterile ones procum-

bent below. *Leaves* glaucous-green often tinged with red. *Flowers* white, star-like with purple *anthers.*

5. S. **álbum* L. (*white S.*); leaves scattered oblong-cylindrical obtuse spreading, cyme much branched glabrous, petals lanceolate. *E. B.* t. 1578.

Rocks, walls, and roofs of houses; in the counties of Middlesex, Worcester, Suffolk, Somerset, Warwick, and Northampton,. Forfar and Glamis, Scotland. ♃. 7, 8. — *Stems* prostrate below, the flowering-stem only erect, 3—5 inches high. *Leaves* pale glaucous-green, sometimes tinged with red. *Flowers* crowded, white or tinged with rose-colour.

6. S. *villósum* L. (*hairy S.*); leaves scattered oblong flattened above, and as well as the peduncles and erect stems hairy and viscid, petals ovate acute. *E. B.* t. 394.

Stony and moist places by the sides of rills; frequent in the N. of England and Scotland, especially the subalpine parts. ♂? 6, 7. — *Stem* 3—4 inches high, reddish-purple. *Leaves* on the short barren shoots almost exactly cylindrical. *Flowers* few, of a pale rose-colour.

**** Leaves subterete. Flowers yellow.*

7. S. *ácre* L. (*biting S.* or *Wall-pepper*); leaves erect alternate ovate gibbous fleshy produced at the base, cymes trifid glabrous leafy, sepals obtuse gibbous at the base, petals acute. *E. B.* t. 839.

Walls, rocks, and sandy ground, frequent. ♃. 6, 7. — Distinguished among our yellow-coloured species, by its upright short and very succulent *leaves*, closely imbricated on the barren shoots. Very biting when chewed, and hence its name of *Wall-pepper.*

8. S. **sexanguláre* L. (*tasteless yellow S.*); leaves generally in 6 rows whorled on the barren shoots cylindrical fleshy spreading produced at the base, cymes trifid glabrous, sepals lanceolate acute not gibbous, petals acute. *E. B.* t. 1946.

Old walls in the east of England, rare. Isle of Sheppey; Greenwich Park; in Cambridgeshire and Old Sarum, Yorkshire. ♃. 7.— Well distinguished from the last by its spreading, larger and slender *leaves*, and by their insertion.

9. S. **reflexum* L. (*crooked yellow S.*); leaves terete awl-shaped scattered spurred at the base, flowers cymose, segments of the calyx lanceolate slightly acute. *E. B.* t. 695.— S. glaucum *Donn. E. B.* t. 2477.

Walls, roofs of houses and thatched buildings, frequent. ♃. 7, 8. — Sterile *branches* with thickly placed *leaves*, often reflexed. *Flowering-stems* 6—8 inches high. *Cyme* large yellow. *Flowers* numerous often with 6 *petals* and 12 *stamens.* Very similar to the two following species. If the true *S. glaucum* be distinct from this, even as a variety, it has not come under our observation: it is said to grow on

rough hills near Mildenhall, Suffolk, and Sunday's Well and Glaskeen, Ireland.

10. S. *rupéstre* L. (*St. Vincent's-Rock S.*); leaves linear-lanceolate flattened glaucous produced at the base, those of the sterile branches closely imbricated appressed, flowers cymose, segments of the calyx elliptical obtuse. *E. B.* t. 170.

St. Vincent and Cheddar rocks, Somersetshire. Barmouth, Tremadock, and Ormeshead, Wales. Walls about Darlington, Yorkshire. ♃. 6, 7. Too near we fear to the last.

11. S. *Forsteriánum* Sm. (*Welsh Rock S.*); leaves lanceolate flattened produced at the base, those of the sterile branches spreading in many rows, flowers cymose, segments of the calyx elliptical obtuse. *E. B.* t. 1802.

Rocks in the spray of water-falls, Wales. Rhydoll, Cardiganshire; Barmouth; Hisväe, valley of Nant-phrancon; Little Ormeshead. Caer-Caradoc, Shropshire. ♃. 6, 7. — This seems only to differ from the last by the leaves on the sterile branches spreading and forming small rose-like tufts; a character in our opinion, not of primary importance.

Ord. XXXVI. GROSSULARIACEÆ *De Cand.*

Calyx 4—5-cleft, the tube entirely or in part adnate with the ovary. *Petals* 4—5, small, placed at the mouth of the tube alternately with the 4—5 short *stamens*. *Ovary* 1-celled, with two opposite parietal placentas which are sometimes projected into the interior and resemble dissepiments. *Ovules* many. *Style* 2—4-cleft. *Berry* crowned with the remains of the calyx. *Seeds* suspended by long stalks among the pulp. *Albumen* horny.—Shrubs, *often spiny, of temperate climates, with alternate lobed* leaves.

1. Ríbes *Linn.* Currant and Gooseberry.

Petals small, scale-like. *Stam.* included or nearly so. (*Style* erect, and *ovary* with nerve-like *placentas* in all the British species.)—Name:—*Ribes* was a word applied by the Arabian physicians to a species of *Rhubarb*, *Rheum Ribes*; our older Botanists believed that it was our *gooseberry*, and hence Bauhin called that plant *Ribes acidum*.

* *Flowers racemose or spicate. Spines none.*

1. R. *rúbrum* L. (*common* or *red C.*); flowers perfect, leaves bluntly 5-lobed, bracteas very small, calyx nearly plane and ovary glabrous, petals obtuse. — *a.* racemes glabrous pendulous *E. B.* t. 1289. — *β.* racemes slightly downy, erect in flower, pendulous in fruit. R. petræum *Sm.* (not *Wulf.*): *E. B.*

t. 705. — γ. racemes spicate, erect in flower and fruit. R. spicatum *Robs.*: *E. B.* t. 1290.

Woods and hedges, but scarcely wild. — β. N. of England, and in Scotland. — γ. Near Richmond, Yorkshire. ♃. 4. 5. — *Leaves* doubly serrate, on longish stalks. Limb of the *calyx* shorter than the spreading roundish segments. *Petals* distinct from each other, cuneiform-orbicular. *Stamens* inserted into the throat of the calyx; *anthers* reniform. *Style* cylindrical; *stigmas* subglobose.

2. R. *alpínum* L. (*tasteless Mountain C.*); dicœcious, branches angled, leaves shining beneath, racemes glandular erect both in flower and fruit, flowers shorter than the bracteas, limb of the calyx nearly plane. *E. B.* t. 704.

Woods, in the N. of England. Scarcely wild in Scotland. ♃. 4, 5. — *Leaves* small frequently 3-lobed; lobes acute, deeply serrate. *Racemes* with a few small flowers. *Cal.* limb nearly flat shorter than the spreading segments. *Petals* distant. *Stamens* inserted into the throat of the calyx. *Style* cylindrical, bifid at the apex; *stigmas* subglobose. *Berries* red, few-seeded.

3. R. *nígrum* L. (*black C.*); flowers perfect, leaves dotted with glands beneath, racemes lax downy pendulous with a separate simple flower-stalk at their base, limb of the calyx campanulate pubescent. *E. B.* t. 1291.

Woods and river-sides, in various situations, but probably introduced. ♃. 4, 5. — *Inflorescence* glandular. Segments of the *calyx* revolute as long as the tubular portion of its limb. *Petals* imbricated at the margins. *Stamens* inserted upon the tube; *anthers* cordate-oblong, apiculate. *Ovary* half superior. *Style* almost entire; *stigmas* somewhat reniform. *Berries* the largest of our *Currants*, black, much esteemed medicinally and for making jelly.

*** Peduncles 1—3-flowered. Stems spiny.*

4. R. *Grossulária* L. (*common G.*); leaves rounded and lobed, peduncles short hairy 1—3-flowered with a pair of minute bracteas. *E. B.* t. 1292. R. Uva-crispa *L.*: *E. B.* t. 2057.

Hedges and thickets, but scarcely indigenous. ♄. 4, 5. — *Branches* not setose. *Thorns* immediately beneath a fascicle of *leaves*, solitary or 2—3 combined at the base, spreading. Limb of the *calyx* campanulate, about as long as the reflexed segments. *Petals* ovate, distant half as long as the stamens. *Stamens* inserted into the bearded throat of the calyx, and shorter than the segments. *Style* cleft to the middle, below which it is very hairy; *stigmas* minute, truncate.

Ord. XXXVII. SAXIFRAGACEÆ *Juss.*

Calyx of 4—5 sepals, or united into a tube which is wholly or in part adnate with the ovary. *Petals* 4—5, or 0. *Stamens* 5—10, distinct, perigynous or somewhat hypogynous. *Ovary*

with usually two diverging persistent *styles*, 2-celled with an axile *placenta*, or 1-celled with parietal *placentas*. *Capsule* 2-valved. *Seeds* numerous. *Albumen* fleshy. — *Small, mostly* herbaceous plants, *frequent in northern and alpine regions.*

1. SAXIFRAGA. Petals 5, ovary 2-celled.
2. CHRYSOSPLENIUM. Petals 0, ovary 1-celled.

1. SAXÍFRAGA *Linn.* Saxifrage.

Cal. superior, or inferior, or half-inferior, in 5 segments. *Pet.* 5. *Stam.* 10 or sometimes 5. *Ovary* 2-celled. *Caps.* with 2 beaks, 2-celled, many-seeded. — Named from *saxum*, a *stone*, and *frango*, to *break*; in allusion to the supposed medicinal virtues of this plant; or, perhaps, to its roots penetrating the crevices of rocks, among which the different species generally grow.

* *Flowering-stems erect, leafless. Flowers panicled. Cal. usually reflexed. Caps. superior or nearly so.*

† *Filaments enlarged upwards.*

1. S. *Géum* L. (*Kidney-shaped S.*); leaves rotundate-reniform crenate or sharply toothed, footstalks hairy linear convex beneath channelled above, scape panicled, capsules superior. — *α.* leaves hairy on both sides. *E. B. S.* t. 2893. — *β.* leaves glabrous on both sides. *E. B.* t. 1561.

Mountains in the south of Ireland. ♃. 6. — This species has the margin of the teeth cartilaginous, but less so than the following. Its type has the leaves hairy and sharply toothed; but they vary much in these respects and in size. Between this and the next there are several hybrids about Killarney, two of which may be noticed. — 1. *S. elegans* Mackay (*E. B. S.* t. 2892.), leaves round and approaching in form to *S. Geum*, but with the petiole shorter and broader, and although convex beneath, it is flat above as in *S. umbrosa*. — Turk mountain. — 2. *S. hirsuta* L. (*E. B.* t. 2322.); leaves deep green slightly hairy oval longer than broad scarcely cordate at base, and the petiole as in *S. Geum*. Gap of Dunloe.

2. S. *umbrósa* L. (*London-Pride*, or *None-so-pretty*); leaves roundish oval with cartilaginous crenatures sharp teeth or serratures tapering gradually into a broad flat footstalk, scape panicled, capsule superior. — *α.* leaves obovate-oblong crenate or toothed spreading. *E. B.* t. 663. — *β.* leaves roundish sharply toothed erect. S. punctata *Haw.* (not *L.*) — *γ.* leaves oblong-ovate erect with deep tooth-like serratures. *E. B. S.* t. 2891.

Plentiful on mountains in south and west of Ireland. Woods at Wetherby, and in Craven, Yorkshire, and about Edinburgh and Glasgow, but not really wild. ♃. 6. — The type of this species has the leaves glabrous, longer than broad, with the teeth either blunt, or short and acute: *γ.* the teeth are long, and in *β.* the leaves are often as short as in *S. Geum*, but it does not appear to be a hybrid.

†† *Filaments subulate.*

[3. S. *Andréwsii* Harv. (*Andrews' S.*); leaves spreading spathulate obtuse glabrous thickish narrowed into the slightly ciliated petiole crenate with a thin membranaceous margin, scape panicled. *Lond. Journ. Bot.* vii. p. 570. t. 19.

Moist cliffs, on a mountain at the extreme termination of Glen Caragh, Kerry. *W. Andrews, Esq.* ♃. 6. — Of this we have abridged Dr. Harvey's specific character, having only seen one or two garden specimens: indeed, from what we have learned, this supposed species is a garden hybrid between *S. umbrosa* and *S. ligulata*; and consequently there must be a mistake in assigning to it the above station.]

4. S. *stelláris* L. (*starry S.*); leaves oblong-cuneiform scarcely stalked, panicle subcorymbose of few flowers, capsule superior.— *α.* leaves angulato-serrate. *E. B.* t. 167.—*β.* leaves quite entire.

Sides of rivulets and wet rocks, in the mountainous parts of the north of England, Scotland, and Ireland. — *β.* rocks on Ben Nevis.

** *Flowering stem erect. Leaves not lobed. Flowers capitate. Cal. spreading. Caps.* ½*-inferior.*

5. S. *nivális* L. (*alpine clustered S.*); leaves obovate subpetiolate acutely crenate subcoriaceous, scape terminated by a dense cluster of flowers. *E. B.* t. 440.

Mountains of Wales, and frequent in the rocky clefts of the Highland mountains of Scotland. ♃. 7, 8. — *Leaves* subcoriaceous, glabrous above. *Scape* glandulous-pubescent, sometimes a little branched.

*** *Stems all procumbent and leafy. Leaves undivided.*

6. S. *oppositifólia* L. (*purple Mountain S.*); leaves ovate opposite imbricated ciliated, flowers solitary terminal. *E. B.* t. 9.

Moist alpine rocks. Ingleborough. Snowdon and other Welsh mountains. Frequent on the Highland mountains of Scotland. ♃. 4, 5. — Grows in straggling tufts, with a habit quite different from that of any other British *Saxifrage*. *Flowers* large in proportion to the size of the plant, purple, very beautiful. The *leaves* are retuse, ciliated, and have a pore at the extremity. *Capsule* half-inferior.

**** *Flowering-stem leafy, erect or spreading. Leaves all entire.*

7. S. *Hírculus* L. (*yellow Marsh S.*); stem erect, leaves alternate lanceolate, those from the root attenuated into a petiole, calyx inferior at length reflexed obtuse downy at the margin as well as the upper part of the stem. *E. B.* t. 1009.

Wet moors, very rare. Knutsford, Cheshire; Cotherstone-fell, Yorkshire. Langton, Berwickshire; Walston, Lanarkshire. Queen's County, Ireland. ♃. 8. — *Flowers* yellow, large, solitary. *Petals* almost elliptical.

8. S. *aizoides* L. (*yellow Mountain S.*); lower leaves of the stem numerous crowded, the rest scattered linear-lanceolate fleshy more or less ciliated, stem branched ascending calyx spreading, capsule half-superior. *E. B.* t. 39.

Abundant near alpine rills, and in springy places, in mountainous countries; north of England, Wales, Scotland, and Ireland. 4. 6—9. — *Stem* 5—7 inches high, branching below. *Flowers* panicled, subcorymbose, bright yellow; each *petal* beautifully spotted with orange.

***** *Flowering-stems erect or spreading, more or less leafy. Leaves (some or all) lobed. Calyx spreading.*

9. S. *granulata* L. (*white Meadow S.*); granulated underground, radical leaves reniform on long foot-stalks obtusely lobed, those of the upper part of the stem nearly sessile acutely lobed, stem panicled, capsule partly inferior. *E. B.* t. 500.

Hedge-banks, meadows and pastures, especially on a gravelly soil. In many parts of the south and middle of Scotland, but scarcely known in the Highlands. Between Beldoyle and Portmarnock, Ireland. 4. 5, 6. — *Stem* 8—12 inches high, glandulose-pilose, with numerous, small, clustered *tubers* underground. *Leaves* mostly radical, glabrous; *petioles* glandular. *Flowers* large, white.

10. S. *cernua* L. (*drooping bulbous S.*); radical leaves reniform on long foot-stalks palmate-lobate, superior ones nearly sessile subtrifid, stem bulbiferous usually simple with one terminal flower, capsule superior. *E. B.* t. 664.

Rocks on the summit of Ben Lawers (now almost extinct). 4. 8. — *Stem* 3—4 or 5 inches high, slender. *Leaves* glabrous, and the *stem*, which droops at the extremity, nearly so. In the axils of the small upper *leaves* are clusters of minute reddish *bulbs* or rather *tubers*. We have never seen native specimens of this in fruit.

11. S. *rivularis* L. (*alpine Brook S.*); leaves 3—5-lobed palmate glabrous on long stalks, stem slender branched pubescent, branches few-flowered, bracteas oblong sessile 3-lobed and entire, capsule half-inferior. *E. B.* t. 2275.

Moist alpine rocks in Scotland, rare. Near the summit of Ben Nevis, and Ben Lawers, but very scarce. Plentiful on Loch-na-gar, Aberdeenshire. 4.

12. S. *tridactylites* L. (*Rue-leaved S.*); glandular and viscid, leaves cuneate 3—5-fid, the uppermost bracteas undivided, stem panicled, pedicels single-flowered, capsule inferior. *E. B.* t. 501.

Common on walls and dry barren ground, in England and the Lowlands of Scotland; rare however in the west of Scotland, and especially in the Highlands. ☉. 4—7. — *Stem* 2—4 inches high. Whole plant covered with viscid *hairs*. *Petals* small, pure white,

scarcely longer than the *segments* of the *calyx*. *Capsule* almost wholly inferior.

13. S. *hypnoídes* L. (*mossy S.*); sterile shoots usually procumbent and elongated, root-leaves 3-cleft, those of the shoots undivided or 3-cleft bristle-pointed or acute and more or less fringed, segments of the calyx pointed.—*α.* leaves of the procumbent shoots mostly undivided and narrow bristle-pointed, petals obovate. *E. B.* t. 454. S. leptophylla *Pers.*—*β.* lobes of the leaves rather narrow bristle-pointed, petals roundish obovate. S. platypetala *E. B.* t. 2276.—*γ.* leaves of shoots mostly 3-lobed, lobes narrow bristle-pointed, petals obovate. S. lætevirens *Don.* S. denudata *Don.* S. affinis *Don: E. B. S.* t. 2903.—*δ.* lobes of the leaves broader acute or bristle-pointed, petals obovate. S. elongella *Sm.: E. B.* t. 2277. S. hirta *Donn*: *E. B.* t. 2291.

Frequent in rocky mountainous situations in England, Scotland, and Ireland. ♃. 5—7.—An abundant and very variable plant. We hesitate whether to refer *S. incurvifolia* of Don here or to the next, one cultivated specimen having the lobes of the leaves mucronate, and another quite obtuse, yet not otherwise distinguishable.

14. S. *cæspitósa* L.? (*tufted alpine S.*); sterile shoots usually very short or wanting, root-leaves crowded fringed 3—5-cleft with obtuse lobes lowermost sometimes undivided, calyx-segments obtuse, fruit hemispherical.—*α.* smaller, without sterile shoots. *E. B.* t. 794.—*β.* larger. S. decipiens *Ehrh.* S. palmata *Sm.: E. B.* t. 455. S. incurvifolia *Don: E. B. S.* t. 2909.

Mountains, rare. Rocks of Twll dû, and Cwm-Idwell, N. Wales. Brandon, co. Kerry. Ben-na-bourd, Aberdeenshire; Ben Nevis. ♃. 5—7.—We fear that the British species is only a variety of the last with obtuse lobes to the leaves. In the Lapland, Norway, and Arctic American plants (see Gunner *Norv.* ii. t. 7. f. 1, 3, 4, which is also *S. Grœnlandica* L.) the calyx when in fruit is of a different form; and the leaves, which are almost glabrous on the surface, are never ciliated with short glandular hairs.

15. S. **muscoídes* Wulf. (*mossy alpine S.*); sterile shoots very short erect, radical leaves crowded linear obtuse entire and trifid, stem nearly naked few-flowered, petals oblong obtuse (buff-coloured) a little longer than the superior calyx. *E. B.* t. 2314.

Mountains above Ambleside, Westmoreland? *Huds.* Highlands of Scotland? ♃. 5.—A very dubious native, the only authority being cultivated plants said to have been originally brought from Scotland: the plant from Westmoreland is supposed to have been *S. hypnoides.*

16. S. **geranoides* L. (*Geranium S.*); sterile shoots short, leaves glandular pubescent thickish scarcely rigid, lower ones and those of the shoots upon very long foot-stalks deeply 3-cleft, the segments usually 3-lobed and incise sometimes 2-lobed or entire, lobes acute, panicle cymose, segments of the superior calyx linear or linear-lanceolate longer than the germen. S. pedatifida *Ehrh.*: *E. B.* t. 2278.

Said to have been found in the "Scottish mountains" by *Mr. J. T. Mackay;* and on "rocks near the head of Clova, Angusshire," by *Mr. G. Don.* ♃. 6, 7. — There seems to be a mistake as to the supposed discovery of this plant in Scotland, a mistake the more probable from its being supposed distinct from *S. geranoides.*

2. Chrysosplénium *Linn.* Golden-Saxifrage.

Cal. superior, 4—5-cleft, somewhat coloured. *Cor.* 0. *Stam.* 8—10. *Ovary* 1-celled. *Capsule* 1-celled with 2 beaks, many-seeded. — Named from χρυσος, *gold*, and σπλην, the *spleen*, or a *medicine for the spleen;* a disease, for which this plant was supposed to be a cure.

1. C. *alternifólium* L. (*alternate-leaved G.*); leaves alternate, lower ones subreniform upon very long foot-stalks. *E. B.* t. 54.

Boggy places among rocks and springs, rather rare in England, more frequent in Scotland. Near Belfast, Ireland. ♃. 4—6. — *Stem* 4—5 inches high, branched near the summit. *Leaves* petiolate, crenate. *Flowers* in small *umbels*, deep yellow, mostly with 8 *stamens.*

2. C. *oppositifólium* L. (*common G.*); leaves opposite cordate-rotundate. *E. B.* t. 490.

Sides of rivulets in shady places, common. Abundant near the source of rivulets in very alpine situations, in the Highlands. ♃. 4—7. — Generally more branched at the base than the last, and of a paler colour in all its parts. *Stamens* usually 8.

Ord. XXXVIII. UMBELLIFERÆ[1] *Juss.*

(See Tabs. I.—III.)

Calyx adherent with the *ovary*, 5-toothed; teeth minute, often obsolete. *Corolla* of 5 *petals*, sometimes very unequal,

[1] In this extensive, important, and perfectly natural group, the genera which compose it are with difficulty distinguished the one from the other. The parts on which the marks of distinction depend are minute; and in vain will the student hope to make himself master of the subject without devoting his earnest attention to it and carefully examining the structure of the flowers, and more especially of the fruit. This latter consists of two single-seeded indehiscent *pericarps*, or *carpels*, as they may be conveniently called, eventually separating, each with its style, and for a time suspended by a central, filiform, and generally bipartite *axis*, or *carpophore* (Tab. I. f. 11. a., and Tab. III. f. 33. a.). They are variously shaped, and marked with longitudinal *ribs* or *ridges*. The number of these ribs upon each *carpel* is five (Tab. I. f. 9. a. b., &c.), more or less apparent, sometimes obliterated. Within

the outer ones the largest. *Stamens* 5, alternate with the petals, inserted on the underside of a thick fleshy disk, at the base of the styles. *Styles* 2. *Achenes* or *carpels* 2, combined, attached near the apex to a central axis, usually separating when ripe. *Seed* solitary, pendulous. *Embryo* minute, in the base of a horny *albumen*.—Herbs. Leaves *alternate generally compound and embracing the stem with their sheathing bases.* Flowers *in umbels.* —This Order contains many poisonous plants, especially such species as grow in watery places; numerous esculent and aromatic ones, usually inhabiting dry situations. Several yield gum-resins; as *Assafœtida*, *Galbanum*, and *Ammoniac*, but the plants themselves are not well ascertained.

I. Umbels simple or imperfectly compound.[1]

* *Vittæ* 0. *Albumen solid.*

1. HYDROCOTYLE. Fruit flat, of two nearly orbicular carpels, naked. Calyx-teeth obsolete.
2. SANICULA. Fruit roundish, without ribs, densely clothed with hooked prickles. Calyx-teeth leafy.

2ª. ASTRANTIA. Fruit roundish, with plicate dentate ribs. Calyx-teeth leafy.

3. ERYNGIUM. Fruit roundish, without ribs, densely clothed with chaffy scales. Calyx-teeth leafy.

** *Fruit with vittæ. Albumen furrowed or involute at the suture.*

39. TORILIS.

II. Umbels compound or perfect.

1. (A—F.) *Fruit not prickly.*

* *Albumen solid.*

A. *Fruit laterally compressed.*

† *Leaves compound.*

‡ *Calyx-teeth foliaceous.*

4. CICUTA. Fruit roundish-cordate.

‡‡ *Calyx-teeth small or obsolete. Petals entire, with a straight or inflexed point.*

5. APIUM. Involucel 0. Fruit didymous; carpels with single vittæ between the ribs.

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the coat of the carpels, generally in the *interstices* between the ribs, are often longitudinal ducts, or canals, called *vittæ* (Tab. I. f. 13. b.), replete with an oily or resinous substance, and usually coloured; so that they are sometimes visible without dissection. (Tab. II. f. 27 a, b.) The *albumen* is either *furrowed* (Tab. III. f. 34. c., 36. b., &c.), or *involute* on its inner face or suture (Tab. III. f. 32. b., 33. b., 38., &c.), or neither, when it is said to be *solid* (Tab. I. f. 4. b., 5. c., &c.).

[1] The fruits of all the genera are represented in Tabs. I.—III., the numbers of the genera indicating the figures in these plates.

6. Petroselinum. Involucel many-leaved. Fruit ovate: carpels with single vittæ between the ribs; carpophore bipartite.
7. Heloscladium. Involucel many-leaved. Fruit ovate or oblong: carpels with single vittæ between the ribs; carpophore entire.
8. Trinia. Carpels with single vittæ beneath each rib. Flowers dicœcious.

‡‡‡ *Calyx-teeth small or obsolete. Petals obcordate or emarginate, with an inflexed point.*

‖ *Fruit with single short clavate vittæ between the ribs.*

9. Sison. Fruit ovate.

‖‖ *Vittæ* 0.

10. Ægopodium. Fruit oblong.

‖‖‖ *Vittæ elongated, linear.*

11. Carum. Fruit oblong: vittæ single between the ribs.
12. Bunium. Fruit oblong: vittæ 2—3 between the obtuse ribs: suture without vittæ.
13. Pimpinella. Fruit ovate: vittæ 3 or more between the slender ribs: suture with vittæ. Styles with a swollen base.
14. Sium. Fruit ovate or globose: vittæ 3 or more between the obtuse ribs: suture with vittæ. Styles with a depressed base.

†† *Leaves simple (reduced to the petiole).*

15. Bupleurum. Calyx-teeth obsolete. Petals roundish entire, with an involute broad point. Fruit ovate-oblong.

B. *Fruit ovate or elliptical, rounded or slightly dorsally compressed; carpels separating, with vittæ.*

† *Vittæ single between the ribs.*

16. Œnanthe. Styles long, erect. Carpels with blunt ribs and single vittæ between them.
17. Æthusa. Styles short. Fruit shortly ovate. Involucre few-leaved. Petals obcordate.
18. Fœniculum. Styles short. Fruit oblong. Involucre 0. Petals entire.
19. Seseli. Styles long, reflexed. Fruit ovate. Involucre many-leaved. Petals obcordate.

†† *Vittæ 2 or more between the ribs. (Involucre many-leaved.)*

‡ *Seeds without vittæ, cohering with the carpels.*

20. Ligusticum. Petals obcordate, with an inflexed point, shortly clawed.
21. Silaus. Petals obovate or emarginate, with an inflexed point, sessile or with an appendage at the base.
22. Meum. Petals entire, elliptical, with an incurved point.

‡‡ *Seeds with many vittæ, loose from the carpel.*

23. Crithmum. Petals roundish, entire, involute.

C. *Fruit much and dorsally compressed.*

24. Angelica. Fruit with 2 wings on each side: ribs equidistant; lateral ones expanding into the wings.
25. Peucedanum. Fruit with one even wing on each side: ribs equidistant; lateral ones obsolete close to the wings: vittæ filiform. Petals with an inflexed point.
26. Pastinaca. Fruit with one even wing on each side: lateral ribs distant, upon the wings: vittæ filiform. Petals involute.
27. Heracleum. Fruit with one even wing on each side: lateral ribs distant, upon the wings: vittæ clavate, short. Petals with an inflexed point.
28. Tordylium. Fruit with one wing on each side which is thick and crenated at the margin.

D. *Fruit globose; carpels scarcely separating.*

29. Coriandrum. Vittæ none.

** *Albumen furrowed or involute at the suture.*

E. *Fruit short, turgid, slightly compressed laterally.*

30. Conium. Vittæ 0 between the waved crenated ribs. Albumen furrowed.
31. Physospermum. Vittæ single between the filiform ribs. Albumen furrowed.
32. Smyrnium. Vittæ several between the ribs. Albumen involute.

F. *Fruit oblong.*

† *Fruit with a conspicuous beak. Vittæ none.*

33. Scandix. Beak very long: carpels with 5 obtuse ribs.
34. Anthriscus. Beak rather short: carpels without ribs.

†† *Fruit with a very short beak, or without one.*

35. Chærophyllum. Carpels obtusely 5-ribbed, with single vittæ between the ribs.
36. Myrrhis. Carpels sharply 5-ribbed, without vittæ.

2. (G.) *Fruit prickly, or with a prickly involucre.*

† *Carpels with 3 dorsal primary bristly ribs, and prickles between them.*

37. Daucus. Albumen solid. Fruit dorsally compressed, with prominent ribs.
38. Caucalis. Albumen involute at the suture. Fruit slightly compressed laterally, with prominent (secondary) ribs.
39. Torilis. Albumen furrowed. Fruit slightly compressed laterally, without evident ribs.

†† *Carpels each with 5 dorsal depressed smooth ribs. Involucre prickly.*

40. Echinophora. Albumen involute.

I. *Umbels simple or imperfectly compound. Fruit without vittæ. Albumen solid.* (Gen. 1—3.)

* *Fruit laterally compressed.*

1. HYDROCÓTYLE *Linn.* White-rot. (Tab. I. f. 1.)

Fruit of 2 flat orbicular carpels, each with 5, more or less distinct, filiform ribs. *Cal.-teeth* obsolete. *Pet.* ovate (Leaves *simple*). — Named from ὕδωρ, *water*, and κοτυλη, a *cup* or *vase*, the common species growing in wet places and having orbicular leaves depressed in the middle and stalked in the centre.

1. *H. vulgáris* L. (*common W.* or *Marsh-Pennywort*); leaves peltate orbicular somewhat lobed and crenate, heads of about 5 flowers. *E. B.* t. 751.

Bogs, marshes, and banks of lakes, frequent. 4. 5—8. — *Stems* creeping, producing from their joints petiolate *leaves* and simple *flower-stalks*, which are much shorter than the petioles. *Flowers* often with a reddish tinge. *Fruit* emarginate at the base.

** *Transverse section of fruit nearly round.*

2. SANÍCULA *Linn.* Sanicle. (Tab. I. f. 2.)

Fruit ovate, densely clothed with hooked prickles. *Cal-teeth* leafy. *Pet.* erect, obovate, with long inflected points. (*Some* flowers *abortive*.) — Name derived from *sano*, to *heal*; because this plant was once supposed "to make whole and sound all inward hurts and outward wounds."

1. S. *Europæ'a* L. (*Wood S.*); lower leaves palmate with the lobes trifid incise-serrate, fertile flowers all sessile. *E. B.* t. 98.

Woods and thickets, frequent. 4. 6, 7. — *Leaves* mostly radical, finely serrate, almost ciliated. *Heads* of *flowers* small, white; there are often sterile flowers which are shortly stalked.

[*Astrantia major* L., observed in one or two places, has no claim to be considered a native.]

3. ERÝNGIUM *Linn.* Eryngo. (Tab. I. f. 3.)

Fruit ovate, clothed with chaffy scales or bristles. *Cal.-teeth* leafy. *Pet.* erect, oblong, with long inflected points. (Involucre of *many leaves*. Flowers *in a compact* head *upon a scaly* receptacle.) — Name: ερυγγιον of Dioscorides.

1. E. *marítimum* L. (*Sea E.* or *Sea-Holly*): radical leaves roundish plaited spinous stalked, upper ones lobed palmate amplexicaul rigid, involucral leaves 3-lobed longer than the heads, scales of the receptacle 3-cleft. *E. B.* t. 718.

Sandy shores of England, frequent. Scotland, chiefly on the west coast. 4. 7, 8. — Whole plant stiff and rigid, glaucous. *Leaves*

and *involucres* beautifully veiny. *Flowers* blue, in dense heads, not having at first sight the appearance of those of this Order. The roots are well tasted, when candied, and have been considered stimulating and restorative.

2. E. **campéstre* L. (*Field E.*); radical leaves subternate, lobes pinnatifid, cauline ones bipinnatifid amplexicaul all with spinous teeth, involucral leaves lanceolate spinous longer than the heads, scales of the receptacle undivided. *E. B.* t. 57.

Very rare. Devil's Point, Stonehouse, near Plymouth (now nearly extinct); near Daventry (extinct); at the eastern extremity of Jarrow ballast-hills, and at Salt-meadows, near Friar's Goose, on the Durham side of the Tyne. Sandy fields near Lismore, Waterford, Ireland. ♃. 7, 8.

II. *Umbels usually compound or perfect.* (Gen. 4—40.)

A. *Fruit not prickly nor beaked, laterally compressed. Albumen solid.* (Gen. 4—15.)

4. Cicúta *Linn.* Water-Hemlock. (Tab. I. f. 4.)

Fruit of 2 almost globose lobes or *carpels*, with 5 broad flattened ribs, and evident single *vittæ* between them. *Cal.-teeth* leafy. *Pet.* obcordate. (Partial involucre *of many leaves.*)—Name: *Cicuta* was a term given by the Latins to those spaces between the joints of a reed of which their pipes were made; and the stem of this plant is equally formed of hollow internodes.

1. C. *virósa* L. (*Cowbane* or *W.*); fibres of the root slender. *E. B.* t. 479.

In ditches, and about the margins of rivers and lakes, in England and the Lowlands of Scotland; but not very frequent. ♃. 6—8.—*Stem* 3—4 feet high, hollow, branched. *Leaves* biternate, the radical ones pinnate: *leaflets* lanceolate, serrate. *Umbels* pedunculate.—A deadly poison to man: cattle have been said, perhaps erroneously, to eat the leaves with impunity, for Linnæus (Lach. Lap. II. p. 136.) held a quite different opinion.

5. A'pium *Linn.* Celery. (Tab. I. f. 5.)

Flowers perfect. Fruit roundish-ovate, didymous; carpels with 5 slender ribs, with single *vittæ* between them and two on the suture: *Carpophore* entire. *Cal.-teeth* obsolete. *Pet.* roundish entire, with a small involute or inflexed point (Involucres 0.)—Name from *ap*, *ab*, or *av*, meaning *water* in various ancient languages, the plant growing in such places.

1. A. *gravéolens* L. (*Smallage or wild C.*); point of petals involute. *E. B.* t. 1210.

Marshy places, especially near the sea; not unfrequent in England. Musselburgh, Scotland. ♂. 6—8.— *Stem* furrowed, 2 feet high. *Leaves* glabrous, pinnate or ternate; *leaflets* of the upper leaves wedge-shaped, lobed and cut at the extremity; the lower leaves are upon long stalks with their leaflets rounder and truncate at the base. *Umbels* often sessile; peduncled ones of few *flowers*. — Origin of our *garden Celery*.

6. Petroselínum *Hoffm.* Parsley. (Tab. I. f. 6.)

Fruit ovate. *Carpels* with 5 slender ribs, and *vittæ* in the interstices; *carpophore* bipartite. *Cal.-teeth* obsolete. *Pet.* roundish, with a narrow incurved point. (Involucre *of few*, partial *of many*, leaves.) — Name: πετρος, a *stone;* being a native of rocky or stony places.

1. P.**sativum* Hoffm. (*common P.*); leaves tripinnate shining, lower leaflets ovate-cuneate trifid and toothed, upper ones ternate lanceolate nearly entire, partial involucres filiform. *E. B. S.* t. 2793. Apium Petroselinum *L.*

Frequent on old walls, especially in the south-west of England. Blarney Castle, near Cork. ♂. 6—8.

2. P. *ségetum* Koch (*Corn P.*); radical leaves pinnate, leaflets nearly sessile ovate lobed cut and serrate, upper leaves with 1—3 linear leaflets, rays of the umbels few and unequal. Sison *L. E. B.* t. 228.

Moist fields, chiefly on calcareous soils, in several parts of the middle and south of England. Sea-shore, between Bognor and Little Hampton; and between Esher and West Moulsey, Surrey. Isle of Wight. ♂. 8, 9. — *Stem* 1 foot to 1½ high, wiry, spreading, branched. *Universal involucre* of about 2 leaves. *Fruit* strongly ribbed.

7. Trínia *Hoffm.* Honewort. (Tab. I. f. 7.)

Dicœcious. *Fruit* ovate. *Carpels* with 5 prominent ribs, and single *vittæ* beneath them. *Cal.-teeth* obsolete. *Pet.* of the *barren* fl. lanceolate with a narrow involute point; of the *fertile* ovate, with a short inflected point. — Named in honour of *Dr. C. B. Trinius*, a Russian botanist, author of "*Species Graminum*," &c.

1. T. *vulgáris* D C. (*common H.*); glabrous, leaves tripinnate, leaflets linear filiform, involucre none or of one leaf, ribs of the fruit obtuse. T. glaberrima *a. Hoffm.* Pimpinella dioica *E. B.* t. 1209.

Limestone, rare. Near Bristol, on St. Vincent's Rocks; at Uphill, Somersetshire; Whorle Hill, Somerset; Bury Head, Devon. Near Athboy, county of Meath, Ireland. ♃. 5, 6. — Whole herb glaucous-green, pale, remarkable for the narrow segments of its *leaves*, and its dicœcious *flowers*. *Root* fusiform.

8. Helosciádium *Koch.* Marsh-wort. (Tab. I. f. 8.)

Fruit broadly ovate or oblong. *Carpels* with 5, slender, prominent ribs, with single *vittæ* between them; *carpophore* entire. *Cal.-teeth* small or obsolete. *Pet.* ovate, obtuse with an apiculus. — Name; ἑλος, a *marsh*, and σκιαδιον, an *umbel.*

1. H. *nodiflórum* Koch (*procumbent M.*); stem procumbent creeping, leaves pinnate, leaflets ovate or ovate-lanceolate unequally serrate, umbels opposite to the leaves. — *α.* larger leaflets bluntly serrate, umbels longer than the peduncles or nearly sessile. Sium *L.*: *E. B.* t. 639. — *β.* smaller leaflets acutely serrate, umbels shorter than the peduncles. Sium repens *L.*: *E. B.* t. 1431.

Boggy meadows and sides of lakes and rivulets. ♃. 7, 8. — *Stems* from 6 inches to 2 feet long. *Leaflets* 5—9. The two varieties often pass into each other.

2. H. *inundátum* Koch (*least M.*); stems creeping, lower leaves capillaceo-multipartite, upper ones pinnatifid, umbels generally of 2 rays. Sison *E. B.* t. 227.

Lakes and pools that are dried up in summer. ♃. 6, 7. — *Stems* 4—6 inches long. *Leaves* mostly capillaceo-multifid, with the segments small and lanceolate, those of the upper leaves wedge-shaped and trifid. *Partial umbels* minute, scarcely longer than their *involucres. Univ. involucre* 0. *Fruit* large in proportion to the size of the plant.

9. Sísон *Linn.* Bastard Stone-Parsley. (Tab. I. f. 9.)

Fruit ovate. Carpels with 5 ribs, and single clavate *vittæ* between them. *Cal.-teeth* obsolete. *Pet.* broadly obcordate, deeply notched and curved, with an inflected point. (Involucres *of few leaves*: partial *subdimidiate.*) — Name: *sizun*, signifying in Celtic a *running brook*; some of the plants formerly placed in this genus delighting in such situations.

1. S. *Amómum* L. (*Hedge Bastard S.*). *E. B.* t. 954.

Chalky, rather moist ground, under hedges, in England. Near Coldstream, Scotland. ♂. 8, 9. — *Stem* 2—3 feet high. Lower *leaves* pinnate with lobed, inciso-serrate, ovate *leaflets*; upper ones cut into narrow segments. *Petals* broad. *Fruit* roundish-ovate, pungent and aromatic.

10. Ægopódium *Linn.* Gout-Weed. (Tab. I. f. 10.)

Fruit oblong, crowned with the conical bases of the deflexed *styles. Carpels* with 5 slender ridges, without *vittæ. Cal.-teeth* obsolete. *Pet.* obcordate, with an inflexed point. (Involucre 0.) — Named from αιξ, αιγος, a *goat*, and πους, a *foot*; the leaves being cleft something like the foot of that animal.

1. *Æ. Podagrária* L. (*Common G.* or *Bishop-weed*). *E. B.* t. 940.

Gardens and wet places. ♃. 6—8. — A foot and a half high. *Radical leaves* twice ternate, upper ones ternate; *leaflets* ovate, acuminate, unequally serrate. The creeping *root* is pungent and aromatic. Although now among our most common and noxious weeds, it appears to have been originally introduced by the monks.

11. Cárum *Linn.* Caraway. (Tab. I. f. 11.)

Fruit oblong, crowned with the depressed bases of the deflexed styles. *Carpels* with 5 ribs, and single *vittæ* between them. *Cal.-teeth* obsolete. *Pet.* obcordate with an inflected point. — Name derived, according to Pliny, from that of the country, *Caria;* but more probably from the Celtic or Gaelic *carbh*, a *ship*, from the shape of the carpels.

1. C. **Cárui* L. (*common C.*); root fusiform, stem branched, partial involucre none, universal none or 1-leaved. *E. B.* t. 1503.

Meadows and pastures, in several places both in England and Scotland. ♂. 6. — *Stem* 1—2 feet high. *Leaves* doubly pinnate, cut into linear segments, of which the lowermost are decussate. *Umbels* dense. *Carpels* agreeably aromatic, and well known as *Caraway seeds*. *Carpophore* bipartite.

2. C. *Bulbocástanum* Koch (*tuberous C.*); root tuberous, general and partial involucres of many linear-lanceolate leaves, leaves tripinnate, their segments linear acute. Bunium *L.*: *E. B. S.* t. 2862.

Fields. Cherry Hinton, Cambridgeshire; and over the whole of the chalk district from Bygrave, near Baldock, in Hertfordshire, to the neighbourhood of Dunstable (20 miles), so plentiful near Baldock, that the farmers turn their pigs upon the fallows to feed upon the root. ♃. 6, 7.

3. C. *verticillátum* Koch (*whorled C.*); root fascicled, leaflets all capillary in short whorled segments. Sison *L.*: *E. B.* t. 395.

In England, very rare; near Carlisle. In the flat parts of Wales, Killarney, and near Bantry Bay, Ireland. Extremely abundant in moist hilly pasturages in the west of Scotland, especially near the Clyde. ♃. 7, 8. — *Leaves* mostly radical; a long common *petiole* bears a number of opposite multifid capillary *leaflets*, whose spreading makes them appear whorled. *Stem* a foot high, slender. *Umbels* few, terminal. General and partial *involucres* very small, deflexed.

12. Búnium *Koch.* Earth-nut. (Tab. I. f. 12.)

Fruit oblong, crowned with the bases of the diverging or nearly straight styles. *Carpels* with 5 slender, obtuse ribs, and 2—3 elongated linear *vittæ* between them, and none upon the suture. *Cal.-teeth* obsolete. *Pet.* obcordate, with an inflected point. — Named from βουνος, a *hill*, where the plant delights to grow.

1. B. *flexuósum* With. (*common E.*); stem-leaves few nearly sessile with linear segments, general involucre 0 or 1—2-leaved, styles erect with a conical base. *E. B.* t. 988.

Woods and pastures, frequent. ♃. 5, 6. — *Root* a solitary *tuber*, much sought for by children and pigs. *Stem* solitary, erect, flexuose. *Radical leaves* triternate. *Fruit* oblong, moderately ribbed, a little narrower upwards, crowned with the straight *styles*, which have conical, elongated, tumid bases.

13. Pimpinélla *Linn.* Burnet-Saxifrage. (Tab. I. f. 13.)

Fruit ovate, crowned with the swollen base of the reflexed styles. *Carpels* with 5 slender ribs, the interstices furrowed, with 2—3 long linear *vittæ*: suture with *vittæ*. *Cal.-teeth* obsolete. *Pet.* obcordate, with an inflected point. (Involucres 0.) — Name altered, as Linnæus informs us, from *bipennula*, or twice-pinnate, in allusion to the division of the leaves.

1. *P. Saxífraga* L. (*common B.*); radical leaves pinnate, their leaflets roundish sharply serrate or cut, those of the stem bipinnate with linear segments, stems terete, fruit glabrous. *E. B.* t. 407.

Dry pastures, frequent. ♃. 7—9. — *Stem-leaves* few; lower and *radical* ones upon long stalks. *Leaflets* of the latter often deeply and pinnatifidly cut, and sometimes even bipinnatifid. *Peduncles* glabrous or densely pubescent (*P. nigra* W.).

2. *P. mágna* L. (*greater B.*); leaves all pinnate, leaflets ovate-serrate somewhat cut the terminal one (rarely the lateral ones) 3-lobed, stem angled and striate, fruit glabrous. *E. B.* t. 408.

Shady places, on a chalky or limestone soil, in several parts of England. Banks of the Teith, Perthshire. Near Cork, Mucruss, and Killarney. ♃. 7, 8. — Larger in all its parts than the foregoing, and the *leaflets* of the upper *leaves* much broader and less divided.

14. Sium *Linn.* Water-parsnep. (Tab. I. f. 14.)

Fruit ovate or globose, subdidymous, crowned with the depressed base of the reflexed styles. *Carpels* with 5, rather obtuse ribs, and 2 or more *vittæ*, between them: suture with *vittæ*. *Cal.-teeth* small or obsolete. *Pet.* obcordate, with an inflected point. (Partial involucre *of many leaves.*) — Name: according to Théis, from the word *siw*, *water*, from which comes the English word *sea*, and the Greek σειω, to *shake*.

1. S. *latifólium* L. (*broad-leaved W.*); stem erect, leaves pinnate, leaflets oblong-lanceolate equally serrate, umbels terminal. *E. B.* t. 204.

River-sides, ditches and watery places. Rather rare in Scotland. ♃. 7, 8. — *Stems* 3—4 ft. high, furrowed. *Leaflets* distant, 5—9.

Involucre of many leaves. *Fruit* small. Base of *styles* depressed. *Carpels* with the lateral ribs marginal; interstices with 3 superficial *vittæ*. *Albumen* flat on the inner face.

2. S. *angustifólium* L. (*narrow-leaved W.*); stem erect, leaflets unequally lobed and serrate, umbels pedunculate opposite to the leaves. *E. B.* t. 139.

Ditches and rivulets, frequent. Not common in Scotland. 4. 7, 8.—Smaller than the last. *Stem* striate. *Leaflets* of the upper *leaves* most unequal and laciniate: *radical leaves* ovate, their lowermost leaflets distant. *Involucre* many-leaved. Base of *styles* somewhat conical. Ribs of the *carpels* not prominent: lateral ones not marginal. *Vittæ* 3 or more together, immersed. *Albumen* terete.

15. BUPLEÚRUM *Linn.* Hare's-Ear. (Tab. I. f. 15.)

Fruit ovate-oblong, crowned with the depressed base of the styles. *Carpels* with 5, more or less prominent ribs, with or without *vittæ*. *Cal.-teeth* obsolete. *Pet.* roundish, entire with an involute retuse broad point. (Leaves *undivided*).—Named from βους, an *ox*, and πλευρον, a *rib*, in allusion to the ribbed leaves of some species.

1. B. *aristátum* Bartl. (*narrow-leaved H.*); stem branched, universal and partial involucre each about 4—5-leaved, leaflets lanceolate cuspidate with branching nerves longer than the umbels, leaves linear 3-nerved, stem panicled, pedicels short equal. B. Odontites *E. B.* t. 2468. (*not* L.)

Rocks in the neighbourhood of Torquay. Channel Islands. ⊙. 7.—A small plant, 3—6 inches or more high, with rigid, striate, pale yellow-green, pungent *leaves*. *Flowers* in terminal, much involucrated *umbels*.

2. B. *rotundifólium* L. (*common H.* or *Thorow-wax*); stem branched above, universal involucre wanting, partial involucres mucronate, leaves perfoliate roundish-oval. *E. B.* t. 99.

Corn-fields in England, on chalky soil. Abundant about Swaffham, and in Cambridgeshire. Streatly, Berkshire. ⊙. 6, 7.—*Carpels* with the interstices striate.

3. B. *tenuíssimum* L. (*slender H.*); stem very much branched, leaves linear acute, umbels very minute few-flowered, partial ones usually shorter than the setaceous involucres. *E. B.* t. 478.

Salt-marshes on the south and east coasts of England. Banks of the Dee, below Chester. ⊙. 8, 9.—*Stems* very wiry, slender. *Leaves* remote, very sharp, mostly 3-nerved. *Umbels* inconspicuous, often sessile and axillary. *Carpels* granulated between the 5 ribs, by which it differs from all our other species.

4. B. **falcátum* L. (*falcate-leaved H.*); stem erect branched,

radical leaves oblong or obovate on long stalks, upper sessile linear-lanceolate, partial involucre of 5 lanceolate leaves as long as the flowers, universal 5-leaved. *E. B. S.* t. 2763.

Norton Heath near Ongar, Essex, growing by the road-side for nearly a mile. ♃. 8.

B. *Fruit not prickly nor beaked, ovate or elliptical, rounded on a transverse section.* (*Carpels separating, interstices with vittæ.*) *Albumen solid.* (Gen. 16—23.)

16. Œnánthe *Linn.* Water-Dropwort. (Tab. II. f. 16.)

Fruit ovate-cylindrical, crowned with the long nearly straight styles. *Carpels* more or less corky, with 5 blunt, convex ribs, and single *vittæ* in the interstices. *Cal.-teeth* lanceolate. *Pet.* obcordate, with an inflected point, radiant. (Partial involucre *of many rays.*) Flowers *of the circumference on long stalks and sterile: those of the centre sessile, or nearly so, and fertile.*— Named from οινος, *wine*, and ανθος, a *flower*, alluding to the vinous smell of the blossoms.

1. Œ. *fistulósa* L. (*common W.*); sarmentose, stem-leaves pinnate, their main stalk as well as the stem cylindrical fistulose, umbels of very few rays, fruit turbinate. *E. B.* t. 363.

Ditches and rivulets, common in England, rare in Scotland. ♃. 7—9.— Plant 2—3 feet high, remarkably tubular, throwing out *runners*. *Root* sometimes of fasicled *knobs*, sometimes of verticillate fibres. *Stem-leaves* distant; the leaflets, which are few, linear and small, are confined to the upper extremity of the leaves. *Univ. invol.* wanting. *Fruit* sessile, large, turbinate, angled, corky, tipped with the long rather diverging *styles*, and forming dense globose heads as large as a marble.

2. Œ. *pimpinelloídes* L. (*callous-fruited W.*); leaflets and segments very acute or mucronate, those of the radical leaves much broader and shorter, fruit cylindrical with an enlarged callous base. *Jacq. Austr.* t. 394.

Pastures in England, particularly in the counties of Gloucester, Worcester, Dorset, and Devon. Abundant in the Isle of Wight. Rare in salt-marshes. Isle of Wight; and Bishopstone, near Seaford, in Sussex. ♃. 6—8.— *Root* of long slender fibres swelling into a round or oval *knob* about or beyond the middle. *Gen. invol.* sometimes wanting, usually with several persistent leaves. *Umbels* compact. *Fruit* as broad as the calyx.

3. Œ. *Lachenálii* Gmel. (*Parsley W.*); leaflets of the lower leaves linear obovate or cuneate-trifid obtuse mucronate, of the upper ones acute, fruit turbinate or oblong narrowest and with-

cut a callosity at the base. Œ. pimpinelloides *Huds.*: *E. B.* t. 347.

Salt-marshes in England, not uncommon; more rare in fresh water. In Scotland chiefly on the west coast and always near the sea. ♃. 7—9. — *Root* of sessile, long, clavate fusiform *knobs*, or subcylindrical thick fibres. *Gen. involucre* sometimes wanting, usually several-leaved and persistent. *Umbels* lax, so that the *partial* ones are not close to each other. *Fruit* broader than the calyx. The *radical leaves* disappear very early, so that practically this must be distinguished from the preceding by the fruit and root. Perhaps it is a mere variety of *Œ. peucedanifolia* Poll.

4. Œ. *silaifólia* Bieb. (*Sulphur-wort W.*); leaflets and segments of the lower stem-leaves linear-lanceolate acute scarcely broader than those of the upper stem-leaves, fruit subcylindrical callous at the base. Œ. peucedanifolia *Sibth.* (not *Poll.*): *E. B.* t. 348.

In fresh-water marshes and meadows, rare. Counties of Oxford, Bedford, Gloucester, Worcester, Leicester, Surrey, and Sussex. Very rare in salt-marshes, as at Port Marnoch, Co. Dublin, Ireland. ♃. 6. — *Root* of sessile, rather short, clavate or oblong-fusiform *knobs*. *Branches* very fistulose. *Gen. involucre* usually wanting, or of a few caducous leaves. *Umbels* lax.

5. Œ. *crocáta* L. (*Hemlock W.*); leaves tri-quadripinnate, leaflets stalked cuneate-ovate or roundish cut and serrate, those of the upper leaves narrower, fruit cylindrical oblong without a callous base. *E. B.* t. 2313.

Watery places, by ditches and rivers, frequent. ♃. 7. — *Root* consisting of large fusiform sessile *knobs*. *Plant* 3—5 ft. high. This differs from all the preceding in the great breadth of its *leaflets*, and the large, much ramified *stems*, the juice of which becomes often *yellow* when exposed to the air. *Gen. involucre* usually of a few leaves.

6. Œ. *Phellándrium* Spr. (*fine-leaved W.*); "stem erect thickened at the base with many whorled fibres, leaves tripinnate their segments simple or pinnatifid, those of the submersed ones capillary, umbels lateral opposite to the leaves, fruit ovate twice as long as the nearly erect styles." *Colem. in E. B. S.* t. 2944 (*ad calcem*). Phelland. aquaticum *L.*: *E. B.* t. 684.

Ditches and ponds. Not uncommon in England. Very rare in Scotland. ☿. 7—9.

7. Œ. *fluviátilis* Colem. (*River W.*); "stem ascending floating attenuated and creeping at the base, leaves bipinnate, segments simple or pinnatifid, those of the submersed ones wedge-shaped pellucid cut with many parallel nerves, umbels lateral opposite to the leaves, fruit broadly elliptical thrice as long as the spreading styles." *Colem. in E. B. S.* t. 2944.

Streams in the middle and south-east of England, where it is more

common than the last. ♂. 7—9. — This has certainly a different appearance from the last, but we are not satisfied that it is not the same species growing in deeper and running water: we can perceive no difference in the form of the fruit. It was first noticed by Dillenius, and seems to have been considered till lately a form of the last by both British and Foreign botanists. See the Phytol. iv. p. 673.

17. Æthúsa *Linn.* Fool's-Parsley. (Tab. II. f. 17.)

Fruit ovate-globose. *Carpels* with 5 acute ribs; interstices deeply acutangular with single *vittæ*. *Cal.-teeth* minute. *Pet.* obcordate, with an inflected point. (Partial involucre *of* 1—3 *unilateral drooping or spreading leaves.*) — Name from αιθω, *to burn*, on account of its acrid quality.

1. Æ. *Cynápium* L. (*common F.*); leaflets wedge-shaped decurrent with lanceolate bluntish segments, rays of the umbel nearly equal, involucre none, partial one longer than the umbel. *E. B.* t. 1192.

Fields and gardens. ☉. 7, 8. — *Stem* a foot high, striate, branched, very leafy. *Leaves* glabrous, doubly, or the lower ones trebly, pinnate; segments ovate-lanceolate, variously cut. *Umbels* terminal, on long stalks; *partial* ones small, distant. *Partial invol.* of 3 long, pendent leaves, all on one side.

18. Fœnículum *Hoffm.* Fennel. (Tab. II. f. 18.)

Fruit oblong. *Carpels* with 5 prominent, obtuse ribs, with single *vittæ* in the interstices. *Styles* short. *Cal.-teeth* obsolete. *Pet.* roundish, entire, the involute segment obtuse. (Involucres 0.) — Named from *fœnum*, *hay*, its smell having been compared to that of hay.

1. F. *vulgáre* Gærtn. (*common F.*); leaves biternate, leaflets pinnatifid, segments awl-shaped or filiform. Anethum Fœniculum *L.*: *E. B.* t. 1208.

Rocks in England near the sea, especially on chalky cliffs. Near towns and villages in Norfolk and Suffolk, at short distances from the coast, but scarcely indigenous. ♃. 7, 8. — *Stem* 3—4 ft. high. *Leaves* much divided; their segments very slender in the cultivated form, but usually shorter and more rigid in wild specimens, particularly those of the upper leaves. *Flowers* dark yellow; the base of the *styles* very glutinous. The true Fennel of the gardens, *F. dulce*, is scarcely distinct, and may be the Norfolk and Suffolk plant.

19. Séseli *Linn.* Meadow-Saxifrage. (Tab. II. f. 19.)

Fruit oval or oblong, crowned with the long reflexed *styles*. *Carpels* with 5 prominent obtuse corky ribs, with single *vittæ* in the interstices. *Cal.-teeth* acute. *Pet.* obcordate, with an inflexed point. (Partial invol. *of many leaves.*) — Named from σεσελι, originally applied to some plant of this kind.

1. S. *Libanótis* Koch (*Mountain M.*); stem furrowed, leaves bipinnatifid, leaflets inciso-pinnatifid, of the lower ones decussate, the segments lanceolate very acute, umbels hemispherical, universal involucre of many leaves, segments of the calyx elongated subulate deciduous, fruit villous. *Athamanta L.: E. B.* t. 138. Libanotis montana *Crantz.*

Chalky pastures, very rare. Gogmagog hills, Cambridgeshire; between St. Alban's and Stony-Stratford; between Seaford and Cushmere, Sussex. ♃. 7, 8. — *Root* fusiform, crowned with the fibrous bases of the old leaves. *Stem* $1\frac{1}{2}$—2 ft. high.

20. Ligústicum *Linn.* Lovage. Tab. II. f. 20.

Fruit elliptical. *Carpels* with 5 sharp, somewhat winged ribs, with many *vittæ* in the interstices. *Cal.-teeth* sometimes obsolete. *Pet.* obcordate, with an inflected point. Partial involucre *of many leaves.* — Named from *Liguria*, where the old *Ligusticum Levisticum* abounds. From the latter word comes its name *Lovage.*

1. L. *Scóticum* L. (*Scottish L.*); leaves twice ternate, leaflets subrhomboid dentate-serrate not glossy, general involucre of about 6 narrow leaves, calyx 5-toothed. *E. B.* t. 1207. Haloscias *Fries.*

Rocky sea-coasts, in the north of England and Scotland, frequent. ♃. 7. — *Root* fusiform, acrid but aromatic. *Stem* nearly simple. *Leaves* mostly radical; *leaflets* large, deeply serrate, rather fleshy.

21. Siláus *Besser.* Pepper-Saxifrage. (Tab. II. f. 21.)

Fruit oval. *Carpels* with 5 sharp, somewhat winged ribs, with many *vittæ* in the interstices. *Cal.* obsolete. *Pet.* obovate, subemarginate with an inflected point, appendaged; or sessile and truncate at the base. Partial involucre *of many leaves.* — Scarcely different from *Ligusticum*, except in its yellowish, nearly entire not acutely emarginate petals, truncate and sessile at the base.—Name of dubious origin; it was applied by Pliny to some herb.

1. S. *praténsis* Besser (*Meadow P.*); leaves tripinnate, leaflets linear-lanceolate opposite, general involucre of 1 or 2 leaves. Peucedanum Silaus *L.: E. B.* t. 2142.

Pastures and meadows, not unfrequent in England. Near Oxenford Castle and Kelso, Scotland. ♃. 6—9. — *Stem* 1—2 feet high. *Partial umbels* small, distant. *Flowers* pale yellow. Whole plant fetid when bruised, apparently rejected by cattle.

22. Méum *Tourn.* Spignel. (Tab. II. f. 22)

Fruit elliptical. *Carpels* with 5 prominent, carinate, equal ribs, with many *vittæ* in the interstices. *Cal.-teeth* obsolete.

Pet. entire, elliptical, the point incurved. (Partial involucre *of many leaves.*) —Name : supposed to be the μηον of Dioscorides

1. M. *Athamánticum* Jacq. (*Meu*, or *Bald-Money*) ; all the leaflets multipartite, segments bristle-shaped. *E. B.* t. 2249. Athamanta Meum *L.*

Dry alpine pastures, in the North of England and Scotland, especially in the Highlands, frequent. ♃. 6, 7. — *Root* fusiform, eaten by the Highlanders as an aromatic and carminative : at its summit are the fibrous remains of former years' leaves. *Leaves* long, dark-green, doubly-pinnate. *Flowers* yellowish. — Remarkable for its setaceo-multifid leaf and powerfully aromatic smell.

23. Crithmum *Linn.* Samphire. (Tab. II. f. 23.)

Fruit elliptical. *Carpels* spongy, with 5 elevated, sharp, somewhat winged *ribs*, and, as well as the loose *seed*, abundantly marked with *vittæ*. *Cal.-teeth* obsolete. *Pet.* elliptical, entire, involute. (Involucres *of many leaves.*) —Name from κριθη, *barley ;* from the resemblance between the fruit of this plant and a grain of barley.

1. C. *marítimum* L. (*Sea S.*). *E. B.* t. 819.

Rocks by the sea-side. Rare in Scotland ; on the coast of the Solway Frith, and Colzean Castle, Ayrshire. ♃. 5—8. — Whole plant very succulent, pale green. *Leaves* bi-triternate ; *leaflets* lanceolate fleshy. Leaves of the *involucre* lanceolate.

C. *Fruit not prickly nor beaked, much and dorsally compressed : Albumen solid.* (Gen. 24—28.)

24. Angélica *Linn.* Angelica. (Tab. II. f. 24.)

Fruit flat, with 2 wings on each side. *Carpels* with 3 elevated dorsal ribs, the lateral ones spreading into broad wings. *Cal.-teeth* small or obsolete. *Pet.* elliptical-lanceolate, entire and inflected at the point. — Named *Angelic* from its cordial and medicinal properties.

1. A. **Archangélica* L. (*Garden A.*) ; terminal leaflet lobed, calyx 5-toothed, fruit without vittæ, seed free marked with numerous vittæ. *E. B.* t. 2561. Archangelica officinalis *Hoffm.*

Watery places, rare. Birmingham ; Dorking, Surrey ; also in Durham : but nowhere truly wild. ♂. 7—9. — *Stem* 4—5 feet high, and from 1—2 inches in the thickest diameter, glabrous, fistulose. *Leaves* bipinnate ; *flowers* greenish-white.

2. A. *sylvéstris* L. (*wild A.*) ; leaflets equal ovate serrate at the base somewhat lobed, calyx-teeth obsolete, fruit with the interstices of the ridges having single vittæ, seed adhering without vittæ. *E. B.* t. 1128.

Moist woods and marshy places, especially near rivers, frequent. ♃. 7, 8. — *Plant* 2—3 feet high. *Stem* purplish, pubescent above, as well as the *umbels*. — Inferior in its qualities to the former species.

25. Peucédanum *Linn.* Hog's-Fennel. (Tab. II. f. 25.)

Fruit flat with a broad thin boarder.[1] *Carpels* with 5 slightly prominent nearly equidistant ribs, the 2 lateral ones obsolete, *vittæ* single in the interstices. *Pet.* obovate or obcordate with an inflected point. (Partial involucre *of many leaves.*) — Named from πευκη, a *pine-tree*, and δανος, a *gift;* on account of a resinous substance, which exudes from some of the species.

1. P. *officinale* L. (*Sea H.*, or *Sea Sulphur-weed*); leaves five times tripartite, leaflets linear-filiform flaccid, involucres few linear deciduous, calyx 5-toothed, fruit with a narrow margin. *E. B.* t. 1767.

In salt-marshes, very rare. Kent and the coast of Essex. ♃. 7—9. — Remarkable for its large *umbels* of yellow *flowers*, and its long and extremely narrow *leaflets*. The whole plant, especially the *root*, has a strong sulphurous smell, and the latter yields a resinous substance, reckoned a stimulant, but of dangerous internal use.

2. P. *palustre* Mœnch (*Marsh H.*, or *Milk-Parsley*); milky, leaves ternately decompound, leaflets opposite pinnatifid, segments linear-lanceolate with a hard point, rays of the umbel rough, involucres of many persistent lanceolate leaves, calyx 5-toothed, fruit with a narrow margin. Selinum. *E. B.* t. 229.

Marshy and boggy places, but apparently very local. Yorkshire and Lancashire; about Norwich and the Isle of Ely; Burwell Fen, Cambridgeshire. Ardincaple on the Clyde. ♃. 7—8. — *Stem* furrowed, 4—5 feet high, with very compound *leaves*, abounding in a milky juice, which dries to a brown resin. *Flowers* white.

3. P. * *Ostruthium* Koch (*broad-leaved H.*, or *Master-Wort*); leaves biternate, leaflets broadly ovate lobed incise-serrate, unequal at the base, sheaths very large, universal involucre none, calyx-teeth obsolete, fruit with a very broad margin. Imperatoria. *E. B.* t. 1380.

Moist pastures in the N. of England, and in various parts of Scotland; the plant was formerly much cultivated as a potherb. ♃. 6. — *Flowers* white. *Partial involucres* several, subulate.

26. Pastináca *Linn.* Parsnep. (Tab. II. f. 26.)

Fruit flat, with a broad border. *Carpels* with 3 dorsal and 2 distant marginal ribs on the border, with single filiform *vittæ*, the length of the fruit, in the interstices. *Cal.-teeth* nearly obsolete. *Pet.* roundish, entire, involute, with a sharp point.

[1] In this genus and the three next, the wing of the fruit, being composed of the margin of two carpels, may separate in maturity into a double wing; but in *Angelica* the wing is always double.

(Involucres 0 *or of few leaves.*)—Differs from *Heracleum* in the entire involute petals, and filiform, not clubbed, vittæ. —Name derived from *pastus, food.*

1. P. *satíva* L. (*common wild P.*); stem furrowed, leaves pinnate downy beneath, leaflets ovate cut and serrate, ultimate one 3-lobed, involucres none, fruit oval. *E. B.* t. 556.

Borders of fields and pastures in a chalky or gravelly soil. About Cambridge; Crosby, by Liverpool; abundant in Hants and Essex. ♂. 7, 8.—*Root* fusiform; the origin of our garden *Parsnep. Leaves* generally shining. *Petals* very convex, involute, yellow.

27. Heráceum *Linn.* Cow-Parsnep. (Tab. II. f. 27.)

Fruit flat, with a broad border. *Carpels* with 3 dorsal ribs and 2 distant marginal ones, and rather short club-shaped *vittæ* in the interstices. *Pet.* obcordate, point inflected; outer ones radiant. (Involucre *deciduous;* partial *of many leaves.*)—Named from *Hercules*, who is said to have brought this or some allied plant into use.

1. H. *Sphondýlium* L. (*common C.*, or *Hog-weed*); leaves pinnate rough hairy, leaflets pinnatifid cut sinuate, ultimate one somewhat palmate, petals unequal, fruit glabrous nearly orbicular. *E. B.* t. 939.—*β.* leaves more deeply cut, lobes narrower. H. angustifolium *Sm.*

Hedges, pastures, and bushy places, frequent. ♂. 7.—A tall rank weed, 4—5 ft. high. *Leaves* coarsely serrate, sheaths inflated. *Flowers* white or reddish. *Carpels* with 2 *vittæ* on the suture.

28. Tordýlium *Linn.* Hart-wort. (Tab. II. f. 28.)

Fruit flat, with a broad thick crenate or waved border. *Carpels* with indistinct ribs, 3 dorsal and 2 distant marginal ones, with 1 or 3 *vittæ* in the interstices. *Pet.* radiant.—Name: the τορδυλιον of the Greeks.

1. *T. *officinále* L. (*small H.*); 2 outer petals of the flowers of the ray each with one very large lobe, partial involucres setaceous as long as the umbels, fruit with the thickened border beautifully crenate and glabrous. *E. B.* t. 2440.

Near London (?) *Ray* and *Petiver.* ☉. 6, 7.—Hairy, 1 foot high. *Leaflets* few, ovate, lobed and notched, upper ones confluent. *Flowers* beautiful, with the outer large lobes of the *petals* white. *Fruit* rough on the surface, and having a very thick, pale, deeply notched or almost beaded border. *Vittæ* several between the ribs, and on the suture.

2. T. *máximum* L. (*great H.*); 2 outer petals of the flowers of the ray each with 2 equal lobes, involucres linear shorter than the umbel, fruit with the thickened border scarcely

notched and as well as the disk rough with appressed bristles. *E. B.* t. 1173.

Rare; in waste ground about London, Oxford, and Eton. Between Twickenham and Isleworth. ☉. 6, 7.—Much taller than the last, and with a greater number of more lanceolate *leaflets*. *Involucre* very short. *Petals* all comparatively small, rose-coloured. *Vittæ* solitary between the ribs, 2 on the suture.

D. *Fruit globose, not prickly; (carpels scarcely separating.) Albumen solid.* (Gen. 29.)

29. Coriándrum *Linn.* Coriander. (Tab. II. f. 29.)

Fruit globose. *Carpels* closely cohering, the ribs obsolete, broad; interstices prominent, slender, without *vittæ*. *Petals* obcordate with an inflected point; outer ones radiant. (Involucre 0. Partial *on one side.*)—Name: from κορις, a *bug*; in allusion to the intolerably fetid smell of the bruised foliage.

1. C.* *sativum* L. (*common C.*). *E. B.* t. 67.

Fields and waste places, about Ipswich and in Essex, &c. ☉. 6.—This is the only true species of the genus, and is well known as a medicinal plant. *Stem* erect, leafy. *Lower leaves* bipinnate; the pinnæ pinnatifid with broad, wedge-shaped, toothed segments: the *upper* leaves gradually more compound, their segments very narrow and linear, those of the uppermost leaves nearly setaceous. *Fruit* very curious; each *carpel* is hemispherical, on its inner and flat side having a projecting margin, which so combines with the opposite one as to leave no line or furrow between the two, and they form a complete little ball or globe, having, however, when quite ripe, 10 obscure elevated lines or ribs.

E. *Fruit short and turgid, not prickly nor beaked, somewhat laterally compressed. Albumen furrowed or involute at the suture.* (Gen. 30—32.)

30. Conium *Linn.* Hemlock. (Tab. II. f. 30.)

Fruit broadly ovate. *Carpels* with 5 prominent waved or crenate ribs, without *vittæ*. *Albumen* furrowed. *Cal.-teeth* obsolete. *Petals* obcordate. (Involucre *of few leaves;* partial *of 3 leaves on one side.*)—Name: κωνειον, of Theophrastus, from κωνος, a *cone* or a *top*, whose whirling motion resembles the giddiness produced on the human constitution by the poisonous juice of this plant.

1. C. *maculátum* L. (*common H.*); stem glabrous spotted, leaves tripinnate, leaflets lanceolate pinnatifid with acute and often cut segments. *E. B.* t. 1191.

Waste places, banks, and under walls, not unfrequent. ♂. 6, 7

— *Root* fusiform. *Stem* 2—4 feet high, hollow, striate and spotted with purple, much branched upwards. *Leaves* large, much divided, when bruised extremely fetid, yielding a powerful medicine. It is best distinguished from its allies by its spotted stem, fetid smell, and by the unilateral partial involucres (which are ovate-lanceolate acuminate and shorter than the umbels), together with the waved ridges of the fruit.

31. PHYSOSPÉRMUM *Cuss.* Bladder-seed. (Tab. III. f. 31.)

Fruit of 2 ovate-globose lobes or *carpels*, each with 5 indistinct filiform ribs, and single *vittæ* between them. *Albumen* furrowed. *Cal.-teeth* evident. *Pet.* obcordate. (Involucre *and* partial involucre *of* 1—5 *leaves.*)—Named from φυσα, a *bladder*, and σπερμα, a *seed*, from the loose covering to the seed.

1. P. *Cornubiénse* Hook. (*Cornish B.*). P. aquilegifolium *Koch.* Ligusticum Cornubiense *L.: E. B.* t. 683.

Bushy fields, about Bodmin, in Cornwall. Wood on the Devonshire side of the Tamar (now extinct). 2. 7, 8. — *Stem* a foot and a half to 2 feet high, erect, striate, glabrous, panicled above. *Leaves* mostly radical, on long stalks, triternate; *leaflets* wedge-shaped, cut and laciniate or deeply tripartite, the segments acute, glabrous or minutely downy on the veins and margins. *Cauline leaves* few, small, less divided, the segments longer and slenderer. The coat of the *carpels* is crustaceous and so loose that the *seed* is free within.

32. SMÝRNIUM *Linn.* Alexanders. (Tab. III. f. 32.)

Fruit of 2 nearly globose lobes or carpels, each with 3 dorsal prominent sharp ribs, the two lateral ones obsolete; interstices in the several *vittæ*. *Albumen* involute. *Pet.* lanceolate or elliptical, with an inflected point.—Named from σμυρνα, synonymous with μυρρα, *myrrh*, from the scent of the juice of some species.

1. S. *Olusátrum* L. (*common Alexanders*); cauline leaves ternate petiolate serrate. *E. B.* t. 230.

Waste ground and among ruins, especially near the sea; not unfrequent. ♂. 4—6. — *Stem* 3—4 feet high, very stout, furrowed. *Leaves* bright yellow-green, twice (or the lower ones thrice) ternate, with a very broad membranous base; *leaflets* very large, broadly ovate, lobed and serrate. *Flowers* yellow-green, in very dense, numerous, rounded *umbels*. *Involucres* none. *Fruit* almost black when ripe.

F. *Fruit oblong, not prickly, furrowed or involute at the suture, usually more or less beaked.* (Gen. 33—36.)

33. SCANDIX *Linn.* Shepherd's Needle. (Tab. III. f. 33.)

Fruit laterally compressed, with a long beak. *Carpels* with 5 obtuse ribs and no *vittæ*. *Cal.-teeth* obsolete. *Pet.* obovate,

with an inflected point. (Universal involucre *wanting, or of one leaf;* partial one *of* 5—7 *leaves.*)—Name: σκανδιξ, the Greek appellation for some kind of *chervil.*

1. S. *Pécten* L. (*common S.*, or *Venus' Comb*); beak 3—4 times longer than the roughish fruit dorsally compressed ciliated with bristles, leaflets cut into many linear or lanceolate short segments. *E. B.* t. 1397.

Corn-fields, abundant. ☉. 6—9.—*Stem* 4—12 inches high, roughish. *Leaves* triply pinnate. *Umbels* of very few rays, 2—3: *universal* ones often sessile in the axil of the sheath of the upper leaves. *Partial invol.* entire or cut, rarely pinnatifid or bipinnatifid and resembling the segments of the leaves.

34. Anthríscus *Pers.* Beaked-Parsley. (Tab. III. f. 34.)

Fruit constricted at the suture, with a short beak. *Carpels* without ribs or *vittæ*. *Cal.-teeth* obsolete. *Pet.* obcordate. (Partial involucre *of many leaves.*)—Name: given by Pliny to a plant, allied probably to this genus, but we are ignorant of its derivation.

* *Fruit smooth.*

1. A. *sylvéstris* Koch (*wild B.*); umbels terminal stalked, stem hairy at the base glabrous upwards, a little swelling below each joint. Chærophyllum *L.*: *E. B.* t. 752.

Under the hedges and borders of fields, frequent. ♃. 4—6.—*Stem* 3 ft. or more high, branched. *Leaves* triply pinnate; *leaflets* ovate-lanceolate, deeply cut. *Umbels* at first slightly drooping. *Partial involucres* of several ovate-lanceolate ciliated leaves. *Fruit* linear-oblong, with a much less evident *beak* than in *A. Cerefolium.* This beak alone is marked with a few ribs.

2. A. **Cerefólium* Koch (*Garden B.*, or *Chervil*); umbels lateral sessile, stems hairy above the joints only, leaves tripartite decompound, leaflets ovate pinnatifid the segments obtuse. Scandix *L.*: *E. B.* t. 1268.

Hedges and about gardens. Clifton, Notts: *Dr. Howitt.* ☉. 5—7.—*Stem* slender, 1½—2 ft. high. *Leaves* pale yellow-green, delicate. *Umbels* sessile, lateral, of few rays, pubescent. *Partial involucres* of few, about 3, leaves, unilateral, linear. *Umbellules* small. *Fruit* large, perfectly glabrous, linear: *beak* about half as long as the fruit.

** *Fruit muricated.*

3. A. *vulgáris* Pers. (*common B.*); umbels stalked opposite the leaves, stem glabrous, leaves ternately decompound, the segments obtuse, fruit ovately conical hispid about twice as long as the glabrous beak. Scandix Anthriscus *E. B.* t. 818.

Waste places, by road-sides, especially near towns and villages. ☉. 5, 6.—*Stem* 2 ft. or more high, swelling under each joint.

Leaves slightly hairy. *Partial umbels* small, with small *involucres*. *Fruit* rather large, with a distinct furrow on each side which extends to the *beak*, covered with hooked bristles.

35. CHÆROPHÝLLUM *Linn.* Chervil. (Tab. III. f. 35.)

Fruit laterally compressed or constricted, with a very short beak. *Carpels* with 5 obtuse ribs, with a deep furrow on the inner face of the carpels. *Interstices* with single *vittæ*. *Cal.-teeth* obsolete. *Pet.* obcordate, with an inflected point. (Partial involucre *of many leaves.*) — Named from χαιρω, to *rejoice*, and φυλλον, a *leaf;* hence comes our word *Chervil*, applied to the cultivated *Anthriscus Cerefolium*, whose leaves have an agreeable smell.

1. C. *temulèntum* L. (*rough C.*); fruit glabrous with obtuse ribs, stem rough (spotted) swelling below each joint, leaflets ovate-oblong cut, partial involucres reflexed. *E. B.* t. 1521.

Hedges and copses, common. ♂. 6, 7. — *Stem* 3 ft. or more high, rough with hairs. *Leaves* doubly pinnate; *leaflets* pinnatifid or incise-lobate, the *segments* obtuse, mucronate. *Umbels* at first drooping. *Fruit* linear-oblong, striate.

2. C. **aúreum* L. (*tawny-fruited C.*); pubescent, fruit with obtuse ribs coloured, stem slightly swelling below the joints, leaflets very acuminate incise-pinnatifid. *E. B.* t. 2103.

Fields between Arbroath and Montrose, and near Corstorphine, Edinburgh. ♃. 6. — *Stem* 3 ft. or more high, branched, aromatic. *Leaves* tripinnate; *leaflets* peculiarly attenuated, at least on the upper leaves (for the radical ones are more obtuse), a character which distinguishes this from every other British species.

3. C. **aromáticum* L. (*broad-leaved C.*); fruit with obtuse ribs, leaves subternate bipinnate, leaflets ovate-oblong subacuminate serrate undivided. *E. B.* t. 2636.

By the side of a river called Lunan and Vennie near Guthrie, Forfarshire. ♃. 6. — *Stem* 2—3 ft. high, slightly pubescent below, glabrous above. *Leaves* biternate; *leaflets* large, undivided or rarely with a small lobe near the base, pubescent beneath. In this, as well as in *C. aureum*, there is sometimes a small *general involucre*. No one has ever found this plant or the preceding, except the late Mr. G. Don, although the stations have been repeatedly searched.

36. MÝRRHIS *Tourn.* Cicely. (Tab. III. f. 36.)

Fruit laterally compressed, with scarcely any beak; suture with a deep furrow. *Carpels* of 2 membranes, deeply furrowed with 5 very prominent acute ribs, and a hollow under them. *Vittæ* none. *Cal.-teeth* obsolete. *Pet.* obcordate with an inflected point. (Partial involucre *of many leaves. Many of the* partial umbels *abortive.*) — Name: perhaps derived from μυρρα,

myrrh; the foliage of one species at least possessing an agreeable scent.

1. M. **odoráta* Scop. (*sweet C.*); leaves somewhat villous beneath partial involucres lanceolate subulate. Scandix *L.*: *E. B.* t. 697.

Pastures in mountainous countries, especially in the north of England and Lowlands of Scotland, generally near houses. ♃. 5, 6.—Whole plant highly aromatic, 2 ft. and more high. *Leaves* large triply pinnate; *leaflets* pinnatifid, ovate-lanceolate, incise-serrate. Many of the *partial umbels* of this species, especially the inner ones, and sometimes even entire *umbels* prove *abortive*. The *fruits* are remarkable for their large size and powerful fragrance.

G. *Fruit clothed with prickles or with a prickly involucre.* (Gen. 37—40.)

37. Daúcus *Linn.* Carrot. (Tab. III. f. 37.)

Fruit dorsally compressed, elliptic-oblong. *Carpels* with 3 dorsal ribs and two in the inner face, bristly, the four interstices very prominent, and crowned with a single row of long flat prickles. *Albumen* solid. *Pet.* radiant, those of the ray deeply bifid. (Involucres *often pinnatifid.*)—Name: the δαυκος of Dioscorides.

1. D. *Caróta* L. (*wild C.*); prickles of the fruit slender distinct at the base, leaves tripinnate, leaflets pinnatifid, segments linear-lanceolate acute, umbels when in seed concave. *E. B.* t. 1174.

Pastures and borders of fields, very frequent. ♂. 6—8.—The origin of our *garden Carrot.*

2. D. *marítimus* With. (*Sea-side C.*); prickles of the fruit usually flattened contiguous and united at the base, leaves tripinnate, leaflets pinnatifid lanceolate fleshy, segments rounded, umbels convex or flat when in seed.—*α.* petals entire white or tinged with red. *E. B.* t. 2560. D. gummifer *Bab.*—*β.* petals fringed greenish-yellow.

Sea-coast of Kent, Dorset, Devon, and Cornwall. Anglesea, Galloway, and Island of Lismore; Scotland. Ireland.—*β.* Dorset. *Prof. E. Forbes.* ♂. 7, 8.—Usually smaller than the preceding, with broader and more fleshy radical *leaves*, and in general with the *prickles* of the *fruit* shorter. But the two are scarcely permanently distinct.

38. Caúcalis *Linn.* Bur-Parsley. (Tab. III. f. 38.)

Fruit slightly laterally compressed. *Carpels* with the ribs (3 slender dorsal ones, and 2 in the inner face) bristly or prickly, with prominent secondary ribs between them bearing

prickles; *vittæ* solitary below each secondary rib. *Albumen* involute. *Pet.* radiant; those of the ray deeply bifid. (Involucres *none, or* 1—3-*leaved.*)—Name: καυκαλις of the Greeks, according to Linnæus from κεω, to *lie along*, and καυλος, a *stem*, from their trailing along the ground.

* *Prickles of the secondary ribs in a single row, longer than the bristles of the fruit.*

1. C. *daucoídes* L. (*small B.*); leaves bi-tripinnatifid, segments short, umbels of few rays, general involucre none, partial umbels of few flowers, their involucres of about 3 small leaves, prickles of the secondary rib hooked. *E. B.* t. 197.

Corn-fields, on a chalky soil, principally in the east and south-east of England. ☉. 6.—*Peduncles* lateral and terminal. General and partial *umbels* of about 3 rays.

** *Prickles of the secondary ribs in 2—3 rows similar to those of the others.* Turgenia.

2. C. **latifólia* L. (*great B.*); hispid, leaves pinnate, leaflets decurrent pinnatifid and serrate, leaves of the involucres ovate membranous, prickles on the fruit all retrorsely scabrous. *E. B.* t. 198. Turgenia *Koch.*

Fields in a chalky soil, rare. Formerly abundant in Cambridgeshire, but now extinct there. ☉. 7.—A very striking plant, and entirely different from the preceding. *Leaves* broad for this tribe of *Umbelliferæ* and comparatively little divided. General and partial *umbels* with about 3—5 rays and about as many leaves to the involucre. *Flowers* rose-coloured, large; *fruit* large, and abundantly aculeate.

39. Torílis *Adans.* Hedge-Parsley. (Tab. III. f. 39.)

Fruit slightly laterally compressed. *Carpels* with 3 dorsal inconspicuous bristly ribs, and 2 in the inner face of the carpels; the interstices scarcely prominent, clothed with prickles, each with a single *vitta*. *Albumen* furrowed. *Pet.* obcordate, outer ones radiant. (Partial involucre *of many leaves.*)—Name of doubtful origin, perhaps, as Smith suggests, from τορεω, to *carve*, or *emboss*; in allusion to the appearance of the fruit.

1. T. *Anthríscus* Gærtn. (*upright H.*); stem erect branched, leaves bipinnate, leaflets lanceolate inciso-serrate attenuate, umbels stalked terminal, involucres of many small subulate leaves. Caucalis *E. B.* t. 987.

Hedges and waste places. ☉. 7—9.—*Stems* 2—3 ft. high. *Fruit* densely clothed with incurved, but not hooked, scabrous bristles.

2. T. *infésta* Spr. (*spreading H.*); leaves bipinnate, leaflets ovate incise-pinnatifid serrate, umbels stalked terminal, general

involucre wanting or of one, partial of few subulate leaves. Caucalis *E. B.* t. 1314.

Fields and way-sides, common. ⊙. 7—9.—*Fruit* with *straight* appressed bristles on the primary *ridges*, and retrorsely scabrous spreading hooked ones on the interstices.

3. T. *nódosa* Gærtn. (*knotted H.*); stem prostrate, umbels lateral simple subsessile, fruit sometimes warted. Caucalis *E. B.* t. 199.

Waste places by road-sides, frequent; especially in dry, gravelly, or chalky soils. ⊙. 5—7.—*Leaves* bipinnate; *leaflets* ovate, pinnatifid, segments linear, acute, short. *Umbels* capitate, opposite the base of a leaf. *Flowers* reddish. *Outer fruits* of the umbel most bristly; *inner* ones partially tubercled. In this species the umbel is as simple as in the first section of the Order.

40. Echinóphora *Linn.* Prickly Samphire. (Tab. III. f. 40.)

Fruit ovate, lodged in a prickly receptacle, with a prickly *involucre*. *Carpels* with 5 depressed, waved and striate, equal smooth ribs, and simple *vittæ* in the interstices which are covered with a cobweb-like membrane. *Albumen* involute. *Pet.* obcordate, with an inflected point. (Involucres *many-leaved.*) —Name derived from εχινος, a *hedgehog*, and φερω, to *bear*; in reference to the prickly nature of the plant.

1. E. **spinósa* L. (*Sea-side P.*, or *Sea-Parsnep*); leaves bipinnatifid, the segments trifid subulate spinous, involucres entire spinous. *E. B.* t. 2413.

Sandy sea-shores, Lancashire and Kent. 4. 7.—A very prickly and singular plant, now, we fear, quite lost as a native of Britain. The flowers of the circumference have stamens only, and at length unite by the base, and surround the solitary central fertile one like an involucre.

Ord. XXXIX. ARALIACEÆ *Juss.*

Calyx-tube adnate in whole or in part with the *ovary*, entire or cleft. *Petals* 4—10, rarely cohering, or none; *æstivation* valvular. *Stamens* equal in number to the petals or twice as many, from the margin of an epigynous disk. *Ovary* 2- or more celled: *ovules* solitary, pendulous. *Styles* as many as cells. *Stigmas* simple. *Fruit* fleshy or dry, of several 1-seeded cells. *Seed* with a fleshy *albumen*, and a minute *embryo*.—Trees, shrubs, *or* herbs; *nearly allied to* Umbelliferæ. Panax *affords the* Ginseng.

1. Adoxa. Corolla monopetalous, rotate. Stem slender, herbaceous.
2. Hedera. Corolla of 5 petals. Stem woody.

1. Adóxa *Linn.* Moschatell.

Cal. half-inferior, 3-cleft. *Cor.* superior, rotate, 4—5-cleft. *Stam.* 8—10, inserted by pairs, each bearing a 1-celled *anther*. *Berry* 4—5-seeded. (The side-flowers have the corolla 5-cleft, the terminal one 4-cleft.)—Name: from *a*, *without*, and δοξα, *glory*; from the humble and insignificant aspect of this little flower.

1. A. *moschatéllina* L. (*tuberous M.*) *E. B.* t. 453.

Woods, hedge-banks, and shady places; not unfrequent at a great elevation and even near the tops of Highland mountains. ♃. 4, 5. — *Root* (or rather subterranean *stem*) composed of tooth-like scales, creeping. *Stem* about a span high. *Leaves* 2—3, radical, on very long *footstalks* triternate, lobed and cut, 2 cauline ones small and simply ternate. *Peduncles* terminal, with a head of 4 verticillate *flowers* and a fifth terminal one. *Stamens* united in pairs; or they may be considered as 4—5 forked *stamens*, each division terminated by the single cell of an *anther*, and all springing from a fleshy ring that surrounds the upper part of the *germen*.

2. Hédera *Linn.* Ivy.

Cal. of 5 teeth. *Pet.* 5, distinct, broadest at the base. *Stam.* 5—10. *Style* simple, or 5—10 more or less combined. *Berry* with 3—10 *seeds* crowned by the calyx.—Name supposed to be from ἑδρα, a *seat*, from its clinging to or *sitting* upon old walls, &c.

1. H. *Hélix* L. (*common I.*); leaves coriaceous ovate or cordate and 3—5-lobed, lobes angular, umbel simple pubescent erect. *E. B.* t. 1267.

Hedges, woods, old buildings, or rocks and trunks of trees, frequent. ♄. 10, 11. — *Stems* very long throwing out numerous fibres, by which they adhere to hard substances. *Leaves* very shining dark green, often veined with whitish lines. *Flowers* small, pale green. *Cal.-teeth* extremely minute. *Pet.* reflexed. *Berries* smooth and black.

Ord. XL. CORNACEÆ *De Cand.*

Calyx-tube adnate with the *ovary*; *limb* 4—5-toothed and minute, or 4—5-lobed and valvate in æstivation. *Pet.* 4, broad at the base; *æstivation* valvular. *Stamens* 4, inserted with the petals. *Style* filiform. *Stigma* simple. *Ovary* 2-celled: *ovules* solitary, pendulous. *Drupe* with a 1—2-celled *nucleus*. *Seeds* with a fleshy *albumen*, and an *embryo* nearly its length. — Trees *or* shrubs, *rarely* herbs. Leaves (*except in one species*) *opposite, and as well as the* fruit, *beset with appressed hairs attached by the middle*. Bark *tonic*.

1. Córnus *Linn.* Cornel, Dogwood.

Cal. of 4 teeth. *Petals* 4, superior. *Stam.* 4. *Nut* of the drupe with 2 cells and 2 *seeds.* — Named from *cornu* (*keren* in Hebrew), a *horn;* owing to the hard nature of the wood, of which javelins were made.

1. C. *sanguínea* L. (*wild C.* or *D.*); arborescent, branches straight, leaves opposite ovate green on both sides, cymes flat destitute of involucre. *E. B.* t. 249.

Woods and thickets, particularly on a chalk or limestone soil; scarcely wild in Scotland. ♄. 6. 7, — *Stem* 5—6 ft. high. *Bark* of the older *branches* dark red, as are the leaves before they fall; these are strongly nerved, entire, slightly hairy beneath. *Cymes* of numerous white *flowers* at the ends of the branches.

2. C. *Suécica* L. (*dwarf C.*); herbaceous, leaves all opposite ovate glabrous sessile, flowers few umbellate surrounded by a 4-leaved petaloid involucre. *E. B.* t. 310.

Alpine pastures in Northumberland and Scotland, especially in turf bogs on the Highland mountains. ♃. 7, 8. — Creeping. *Stems* about six inches high. *Umbel* terminal, from the axil of 2 young branches which do not exceed the general flower-staik in height, till the fruit is ripe.

Ord. XLI. LORANTHACEÆ *Juss.*

Stamens and *pistils* often separated. *Calyx-tube* adnate with the *ovary*, bracteate at the base; its *limb* entire or lobed. *Corolla* of 4—8 *petals*, or monopetalous, with a valvular æstivation. *Stamens* as many as divisions of the *corolla* and opposite to them. *Ovary* 1-celled. *Ovule* solitary, pendulous. *Style* 1 or none. *Stigma* simple. *Fruit* inferior, succulent. *Albumen* fleshy. — *Parasitical, mostly tropical* Shrubs. Leaves *entire, generally opposite, thick and fleshy, without stipules.* — The seed sometimes contains 2 or even 3 embryos.

1. Víscum *Linn.* Mistletoe.

Barren fl. Cal. obsolete. *Pet.* 4, ovate, fleshy, united at the base and bearing each a single anther adnate with the upper surface. — *Fertile fl. Cal.* an obscure margin, superior. *Pet.* 4. erect, ovate, very minute. *Stigma* sessile. — Name: ἱξος, Greek, from *gwid*, Celtic, *the shrub*, par excellence, a sacred plant with our ancestors.

1. V. *álbum* L. (*common M.*); leaves obovate-lanceolate obtuse obscurely 3—7-nerved, branches dichotomous or verticillate, heads of flowers in the axils of an upper pair of leaves. *E. B.* t. 1470.

Parasitic, mostly on apple-trees, very seldom on the oak; frequent

in the southern parts of England. On *Acer campestre* in Gloucestershire and on Lime-trees and Locust-trees (*Robinia Pseudo-Acacia*) in Bedfordshire. Meikleour, Scotland (introduced). ♄. 3—5. —Whole plant of a yellow hue, thick and succulent.

B. Corolla Monopetalous.[1] (Ord. XLII.—XLIX.)

Ord. XLII. CAPRIFOLIACEÆ *Juss.*

Calyx-tube adnate with the *ovary*, usually bracteate at the base. *Corolla* regular or irregular; the segments imbricated in *æstivation*. *Stamens* 4—5, alternate with the lobes of the corolla. *Stigmas* 3—5 and nearly sessile, or subcapitate at the extremity of a filiform *style*. *Ovary* 3—5 celled, several cells sometimes obliterated. *Fruit* generally a *berry*, 1- or many-celled, 1- or many-seeded, crowned with the persistent lobes of the calyx. *Albumen* fleshy.—Shrubs *or* Herbs. Leaves *opposite entire, and then without* stipules, *or rarely divided*. Bark astringent; the flowers of *Sambucus* are purgative.

* *Stigmas* 3, *sessile.*

1. Sambucus. Cor. rotate. Berry 3—4-seeded. Leaves pinnate.
2. Viburnum. Cor. campanulate or funnel-shaped. Berry 1-seeded. Leaves entire or lobed (never pinnate).

** *Style* 1, *filiform, with a subcapitate stigma.*

3. Lonicera. Cor. limb irregular. Stam. 5.
4. Linnæa. Cor. limb nearly regular. Stam. 4, didynamous.

1. Sambúcus *Linn.* Elder.

Cal. limb 5-cleft. *Cor.* rotate, 5-lobed. *Stam.* 5. *Stigmas* 3, sessile. *Berry* 3- or 4-seeded. (*Leaves pinnate.*) — Named from σαμβυκη, a musical instrument, in the construction of which this wood is said to have been employed.

1. S. *E'bulus* L. (*dwarf E.* or *Dane-wort*); cymes with 3 principal branches, leaflets lanceolate, stipules foliaceous, stem furrowed herbaceous. *E. B.* t. 475.

Way-sides and in waste places, not uncommon in England and Scotland and Ireland. ♃. 7, 8.—*Stem* 2—3 ft. high, angular and furrowed. *Leaves* pinnate; *leaflets* serrate. *Cymes* large, terminal purplish. *Anthers* large, purple. *Berries* spherical, black. — The plant has a fetid smell, and is violently purgative.

2. S. *nígra* L. (*common E.*); cymes with 5 principal branches, leaflets ovate or roundish, stipules obsolete, stem arboreous. *E. B.* t. 476.—β. leaflets laciniate.

[1] The monopetalous orders with a free ovary will be found among the Corolliflorae; and Cucurbitaceæ among the polypetalous division.

Woods, coppices, &c., frequent. β. Leicestershire, and near Ayr. ♄. 6.—A small *tree*, having the *stems* and *branches* full of pith. *Leaves* pinnate; *leaflets* serrate or laciniate. *Cymes* terminal, large, cream-coloured, smelling unpleasantly.

2. Vibúrnum *Linn.* Guelder-rose.

Cal.-limb 5-cleft. *Cor.* campanulate or funnel-shaped, 5-lobed. *Stam.* 5. *Stigmas* 3, sessile. *Berry* inferior, 1-seeded. (Leaves *simple.*)—Name of doubtful origin.

1. V. *Lantána* L. (*mealy G.* or *Wayfaring-tree*); leaves elliptic with a cordate base serrate veined downy beneath, pubescence stellate. *E. B.* t. 331.

Woods and hedges, especially in a chalky or limestone soil. Dunglass glen, Scotland. ♄. 5, 6.—A large *shrub*, much branched, the young shoots very downy. *Flowers* in large dense *cymes*, white. *Cal.-teeth* very minute. *Berry* purplish-black.

2. V. *Opulus* L. (*common G.*); leaves glabrous 3—5-lobed, lobes acuminate and serrate, petioles with glands. *E. B.* t. 332.

Woods and coppices, not unfrequent in England and Scotland. ♄. *Fl.* 6, 7.—A small *tree*, very glabrous. *Leaves* large, subcordate, broad. *Cymes* large, with white *flowers*; the perfect ones small and resembling the last; abortive ones in the circumference, consisting of a very large, plane, 5-lobed *corolla*, without either *stamens* or *pistil*. *Flowers* erect. *Berries* reddish-purple, drooping.

3. Lonícera *Linn.* Honey-suckle.

Cal.-limb small, 5-toothed. *Cor.* tubular or somewhat funnel-shaped, the limb irregular, 5-cleft. *Stam.* 5. *Style* filiform. *Stigma* capitate. *Berry* 1—3-celled, few-seeded.—Named in honour of *Adam Lonicer*, a German botanist.

1. L. * *Caprifólium* L. (*pale perfoliate H.*); flowers ringent whorled terminal sessile, leaves deciduous glabrous obtuse, upper ones connate perfoliate, style glabrous. *E. B.* t. 799.

Woods and thickets, rare. Oxfordshire and Cambridgeshire. In Colinton woods and on Corstorphine hill near Edinburgh, and in hedges at Dalmeny, Linlithgowshire. ♄. 5, 6.—*Berries* smooth, of an orange-colour.

2. L. *Periclýmenum* L. (*common H.*, or *Woodbine*); heads stalked, flowers ringent capitate terminal, leaves all distinct deciduous oval. *E. B.* t. 800.

Frequent in woods and hedges. ♄. 6—9.—*Berries* red.

3. L. * *Xylósteum* L. (*upright Fly H.*); peduncles 2-flowered downy as long as the flowers, berries distinct except at the base, calyx-limb deciduous, leaves ovate entire downy. *E. B.* t. 916.

Thickets. Hertfordshire. Near Sewenshele, Northumberland. Houghton Bridge, near Arundel, Sussex. ♄. '5, 6. — An erect *shrub*, with pale, yellowish, small, scentless, *flowers*, succeeded by bright scarlet *berries*. There being no allied species in this country, we can scarcely suppose that this has not been accidentally naturalised by man or birds.

4. Linnæ'a *Gronov.* Linnæa.

Cal.-limb 5-cleft. *Cor.* campanulate, 5-cleft, equal. *Stam.* 4, didynamous. *Fruit* a dry, 3-celled *berry*, with one cell only bearing a perfect *seed*. *Involucre* of about 4 leaves at the base of the *germen*. — Name: — It was this "little northern plant, long overlooked, depressed, abject, flowering early," which Linnæus himself selected as therefore most appropriate to transmit his name to posterity. *Sm.*

1. L. *boreális* Gronov. (*two-flowered L.*) *E. B.* t. 433.

Woods in Scotland, especially of Fir, more rarely in open rocky and mossy situations, chiefly in the counties of Perth, Forfar, Inverness, and Aberdeen. Rare and perhaps only naturalised on the south of the Tay; banks of the Esk, at Dalhousie. Hartburn, Northumberland. ♃. 7. — *Stems* trailing, filiform, branched. *Leaves* opposite, broadly ovate, stalked, obscurely crenate. *Peduncles* axillary, long, erect, 2-flowered, or occasionally from luxuriance 3—4 flowered. *Flowers* fragrant, graceful, drooping; *pedicels*, *bracteas*, *involucre*, globose *germen* and *calyx*, all clothed with glandular *hairs*.

Ord. XLIII. RUBIACEÆ *Juss.*

Calyx adherent with the *ovary*, entire or toothed at the margin. *Corolla* regular. *Stamens* inserted upon the corolla and between its divisions. *Style* 1. *Ovary* 1, with 2 or more cells. *Embryo* straight, surrounded by a horny *albumen*. *Radicle* inferior. — Leaves *opposite with interpetiolar* stipules *or whorled*. — A most important natural family. All the species found in Europe belong to the group called *Stellatæ* or *Rubiaceæ* proper, and have, besides the above characters, a 4—5-lobed corolla, valvular in æstivation, 4—5 stamens, a bipartite or bifid style, 2 capitate stigmas, a 2-celled 2-seeded pericarp, and slender herbaceous square stems with whorled leaves: their roots yield a dye. Those individuals having woody, or shrubby, rarely herbaceous stems, and opposite and stipuled leaves, afford *Peruvian Bark*, in the various species of *Cinchona*; *Gambeer*, in *Nauclea*; a febrifuge, in *Condaminea* and *Rondeletia*; powerful emetics, in *Psychotria* and *Cephaelis*, especially *C. Ipecacuanha*, which is the *true* or *Brazilian Ipecacuanha*, in *Spermacoce* and *Richardsonia*: these, together with *Coffea*, the *Coffee-tree*, &c., are natives of warm climates.

1. Rubia. Cor. rotate, 5-cleft. Fruit succulent.
2. Galium. Cor. rotate, 4-cleft. Fruit dry, not crowned by the calyx.
3. Sherardia. Cor. funnel-shaped. Fruit dry, crowned with the calyx.
4. Asperula. Cor. funnel-shaped. Fruit dry, not crowned with the calyx.

1. Rúbia *Linn.* Madder.

Cor. rotate or campanulate or funnel-shaped, 4—5-cleft. *Stam.* 4—5. *Fruit* a 2-lobed *berry*. — Named from *ruber*, *red*; from the red dye afforded by its species, especially *Rubia tinctorum*, which produces the true *Madder*, or *Turkey-red* of commerce.

1. R. *peregrína* L. (*wild M.*); leaves 4—6 in a whorl elliptic or lanceolate persistent glossy, the margin and keel rough with reflexed prickles, corolla rotate 5-cleft. *E. B.* t. 851.

Stony and sandy ground in the south-west of England. Isle of Wight. Anglesea. ♃. 6—8.

2. Gálium *Linn.* Bed-straw.

Cor. rotate, 4-cleft. *Stam.* 4. *Fruit* a dry, 2-lobed, indehiscent *pericarp*, without any distinct margin to the calyx. — Named from γαλα, *milk*; the plant having been used to curdle milk.

* *Root perennial. Flowers yellow. Fruit glabrous.*

1. G. *vérum* L. (*yellow B.*); leaves about 8 in a whorl linear with revolute margins grooved above, downy beneath, flowers in dense panicles. *E. B.* t. 660.

Dry banks, sandy places, and sea-shores, common. ♃. 6—9. — Readily distinguished by its yellow *flowers* and linear deflexed *leaves*. According to Lightfoot the inhabitants of some of the Western Isles employ the roots, and principally the bark of them, to dye red; hence the name for the plant *ruadh* or *ruddy*.

2. G. *cruciátum* L. (*Cross-wort B.*, *Mug-wort*); leaves 4 in a whorl ovate 3-nerved hairy, flowers polygamous in small axillary corymbs, peduncles 2-leaved. *E. B.* t. 143.

Hedge-banks and thickets, common. ♃. 4—6. *Lateral* flowers of each corymb mostly male, fertile ones often 5-cleft; *fruitstalks* deflexed.

** *Root perennial. Flowers white. Fruit glabrous.*

3. G. *saxátile* L. (*smooth Heath B.*); leaves about 6 in a whorl obovate mucronate, stem much branched smooth usually prostrate, panicles corymbose small, pedicels erecto-patent, petals slightly acute, fruit granulated. *E. B.* t. 815.

Heathy spots and hilly and mountainous pastures, abundant; in some places the ground is almost white with it during summer. ♃. 6—8. — *Plant* turning nearly black in drying, usually small, but occasionally growing among grass and rushes in swampy places and then almost a foot high and sometimes mistaken for *G. uliginosum*. *Leaves* often rough at the margins, of a thickish and rather soft texture. *Fruit*, as Sir J. E. Smith well observes, becoming reddish after the corollas fall, and then, when fertile, granulated on the surface.

4. G. *pusíllum* L. (*least Mountain B.*); leaves about 8 in a whorl linear-lanceolate hair-pointed entire lower ones somewhat hairy, stem spreading, panicles terminal few-flowered, pedicels erecto-patent, fruit obscurely granulated, petals somewhat acute. *E. B.* t. 74.

Limestone hills in various parts of England; near Kendal; about Matlock, Derbyshire; near Settle, Yorkshire; also in the counties of Stafford, Lancaster, and Cumberland. Basaltic rock, Antrim; and near the lake of Killarney; Ireland. Ochil and Strathblane hills, and the Forfarshire mountains, Scotland. ♃. 7, 8. — Closely allied to *G. saxatile*, from which it is sometimes scarcely to be distinguished except by the narrow and more pointed *leaves*.

5. G. *uliginósum* L. (*rough Marsh B.*); leaves 6—8 in a whorl linear-lanceolate bristle-pointed, their margins and the stem rough with reflexed prickles. *E. B.* t. 1972.

Wet meadows and sides of ditches. ♃. 7, 8. — *Panicles* small, axillary, few-flowered; *branches* erecto-patent. *Fruit* dark-brown, granulated, its stalks erect. Distinguished from the next by the narrow *leaves*, shortly acuminated at their points into a mucro. It does not turn black in drying.

6. G. *palústre* L. (*white Water B.*); leaves 4—6 in a whorl oblong-lanceolate obtuse tapering at the base and as well as the lax spreading branched stem more or less rough, panicles diffuse, fruit-stalks divaricated. — *α*. stem and leaves smoothish. G. palustre *E. B.* t. 1857. — *β*. nerves at the back and margins of the leaves and angles of the stem distinctly rough with mostly reflexed prickles. G. Witheringii *E. B.* t. 2206.

Sides of ditches, lakes, and rivulets. ♃. 7, 8. — We cannot distinguish what British collectors call *G. elongatum* from our *var. β.* — "The transition from the smooth to the rough state of this plant may be observed on the borders of pools; and it is only in very wet spots that it corresponds with the description in *E. Fl.* of *G. palustre*." — *W. Wilson.*

7. G. *eréctum* Huds. (*upright B.*); leaves 6—8 in a whorl lanceolate mucronate their margins rough with prickles pointing forward, branches of the panicle all ascending, stem flaccid, segments of the corolla taper-pointed, fruit-stalks divaricated. *E. B.* t. 2067. G. aristatum *Sm.*: *E. B. S.* t. 2784.—*β*. leaves

narrower. G. diffusum *Don.* G. cinereum *Sm.* (not *All.*): *E. B. S.* t. 2783.

Hedges and pastures, not common. In Norfolk; at Portslade, Sussex; and near Cambridge. Portobello, Dalmahoy, and Slateford, near Edinburgh. Wood, west of Kinnaird mill, Forfarshire. *β.* Slateford near Edinburgh; Kinnaird, Forfarshire. *G. Don.* ♃. 6.—In all the specimens we have seen the *stem* is hairy at the very base, but it is sometimes quite glabrous above, although in England is is usually hairy there also, at least on the angles.

8. G. *Mollúgo* L. (*great Hedge B.*); leaves 6—8 in a whorl oblong-lanceolate or obovate mucronate rough at the margin with prickles pointing forward and lower branches of the panicles spreading horizontally, stem flaccid, segments of the corolla taper-pointed, fruit-stalks divaricated.—*α.* stem glabrous, leaves oblong-lanceolate, floral ones small. *E. B.* t. 1673.—*β.* stem and leaves hairy.—*γ.* stem glabrous, leaves obovate, floral ones large. G. Insubricum *Gaud.*

Hedges and thickets, less frequent in Scotland.—*γ.* Winander Mere: *Rev. C. A. Stevens.* ♃. 7, 8.—*Stems* very long and straggling, thickened above the joints. Small specimens of this have sometimes the panicle close, when they cannot be distinguished from *G. erectum*, a species it must be confessed not satisfactorily distinct. Dr. Bromfield found a *var.* in the Isle of Wight with greenish flowers.

*** *Root perennial. Flowers white. Fruit hispid.*

9. G. *boreále* L. (*Cross-leaved B.*); leaves 4 in a whorl lanceolate 3-nerved glabrous, stems erect, fruit covered with hooked bristles. *E. B.* t. 105.

Moist rocks, frequent in the north of England, Wales, and Ireland. ♃. 6, 7.—In very shady places and clefts of rocks, the *stems* are long and straggling. *Flowers* numerous, crowded, white. *Bristles* of the *fruit* hooked.

**** *Root annual. Flowers white or greenish.*

10. G. *Parisiénse* L. (*Wall B.*); leaves about six in a whorl lanceolate bristle-pointed rough at the margins with prickles pointing forwards, peduncles axillary their branches divaricated slender subtrichotomous, stems slender rough with decurved prickles—*α.* fruit hispid. G. Parisiense *L.* G. litigiosum *D. C.*—*β.* fruit glabrous granulated. G. Anglicum *Huds.*: *E. B.* t. 384.

β. Walls and dry sandy soils, rare; in Kent and various parts of the east and south-east of England, especially on old walls. ☉. 6, 7.

11. G. **saccharátum* All. (*warty-fruited B.*); leaves 6 in a whorl lanceolate their margins rough with prickles pointing

forward, peduncles axillary 3-flowered, fruit reflexed warted. G. verrucosum *E. B.* t. 2173. Valantia Aparine *Linn.*

Corn-fields, rare. Corn-fields in the Carse of Gowrie, Scotland. Near Malton, Yorkshire. ☉. 6—8. — *Prickles* of the *stem* reflexed. The two lateral flowers on each peduncle are sterile and fall away, one from each side of the large warted *fruit*, which, together with the marginal prickles of the leaves pointing forwards, essentially distinguish this species from *G. tricorne.* Probably introduced with seed-corn; it has not been found for many years.

12. G. * *spúrium* L. (*smooth-fruited Corn B.*); leaves 6—8 in a whorl linear-lanceolate their margins midrib as well as the angles of the stem rough with reflexed prickles, peduncles axillary 3—9-flowered, fruit smooth or hispid, the stalks divaricated straight. — *α.* fruit smooth. *E. B.* t. 1871. — *β.* fruit hispid. G. Vaillantii *D. C.*: *E. B. S.* t. 2943.

Fields of corn, clover, and potatoes, rare. *α.* Near Forfar. *β.* Saffron Walden and Chesterfield, Essex; Cambridgeshire. ☉. 7. — Allied to the 2 last species in its short axillary *peduncles*, but in general habit coming so near to *G. Aparine*, that our *var. β.* is scarcely to be distinguished. *G. spurium* however has small yellowish-green (not white) flowers, a small less hispid fruit, and it does not climb hedges. In general *G. spurium* has numerous flowers on erect peduncles, but sometimes only 3; while *G Aparine* has usually only 2 or 3, but sometimes more; so that no character can be derived from these. We are therefore of opinion that they differ by too few characters to be distinct species.

13. G. *tricórne* With. (*rough-fruited Corn B.*); leaves 6—8 in a whorl linear-lanceolate their margins midrib and angles of the stem rough with reflexed prickles, peduncles axillary 3-flowered, fruit reflexed granulated. *E. B.* t. 1641.

Dry chalky fields in many counties in England. ☉. 6—10. — *Flowers* all apparently perfect, but the central one only usually fertile.

14. G. *Aparíne* L. (*Goose-grass* or *Cleavers*); leaves 6—8 in a whorl linear-lanceolate hispid their margins midrib and angles of the stem very rough with reflexed prickles, peduncles axillary about 3-flowered, the stalks divaricating straight, fruit hispid. *E. B.* t. 816.

Hedges, abundant. ☉. 6, 7. — *Stem* weak, straggling and climbing among bushes, rarely in corn-fields or on the sea-shore, and then as small as in *G. spurium.* *Flowers* white, usually 2 or 3 together, sometimes 5, on rather short *footstalks* arising from the axils of the leaves. *Bristles* of the *fruit* hooked, which by their means catches hold of the coats of animals and is widely dispersed.

3. Sherárdia *Linn.* Sherardia or Field-Madder.

Cor. funnel-shaped. *Stam.* 4. *Fruit* crowned with the *cal.* —Named in honour of *James Sherard*, an English botanist and patron of that science, whose fine garden at Eltham in Kent gave rise to the famous "*Hortus Elthamensis*" of Dillenius.

1. S. *arvénsis* L. (*blue S.*); leaves about 6 in a whorl, flowers terminal sessile capitate. *E. B.* t. 891.

Corn-fields, or pastures especially in a light gravelly soil, frequent. ☉. 4—10.—A small, slender, branched and spreading plant. *Leaves* obovate-lanceolate, acute, their margins rough, upper ones 7—8, forming an involucre to a small sessile *umbel* of pale blue *flowers*. *Cal.* of 4 segments, two opposite ones bifid; these bifid ones correspond to the line where the *fruit* divides into two 1-seeded portions, each of which is crowned with 3 teeth, one being the single tooth or segment of the *cal.*, the other two, each half of a double one.

4. Aspérula *Linn.* Woodruff.

Cor. funnel-shaped. *Stam.* 4. *Fruit* without any distinct margin to the *cal.* —Named from *asper*, *rough*, owing to the roughness of some species of the genus.

1. A. *odoráta* L. (*sweet W.*); leaves 6—8 in a whorl lanceolate, flowers panicled on long stalks, fruit hispid. *E. B.* t. 755.

Woods and shady places, plentiful. ♃. 5, 6. — About 6 inches high, erect. *Flowers* white. Whole plant very fragrant, like *Anthoxanthum*, especially when drying.

2. A. *Cynánchica* L. (*small W.*, *Squinancy-wort*); leaves linear 4 in a whorl very irregular in the uppermost whorls, fruit granulated scabrous. *E. B.* t. 33.

Warm banks, especially in chalky countries. Limestone rocks, Swansea, S. Wales. Not found in Scotland. ♃. 6, 7. — *Flowers* generally lilac. One pair in the whorl of the uppermost leaves, is reduced to small lanceolate *stipules*.

3. A. * *arvénsis* L. (*Field W.*); annual, leaves 6—10 in a whorl linear-lanceolate obtuse, flowers aggregate terminal surrounded by long ciliated bracteas, fruit glabrous. *E. B. S.* t. 2792.

Near Devonport, now extinct. ☉. 6. — *Flowers* bright blue. *Fruit* large and very conspicuous.

[*A. Taurina* L. is mentioned as naturalised in Leicestershire and Westmorland.]

Ord. XLIV. VALERIANACEÆ *Juss.*

Calyx-tube adnate with the *ovary;* the *limb* toothed, or a thickened margin at the top of the ovary, at length unfolding into a feathery *pappus*. *Corolla* with 3—6 lobes. *Ovary* with 1 perfect cell and often 2 or 3 abortive ones. *Fruit* dry, indehiscent, 1-seeded. *Seed* pendulous.—Leaves *opposite, without stipules.*—Tonic and bitter herbs; the roots, used as Vermifuges, have a powerful scent; those of *Nardostachys Jatamansi* constitute the Spikenard of the ancients.

1. Centranthus. Stam. 1. Cor. spurred. Fruit with a feathery pappus.
2. Valeriana. Stam. 3. Cor. gibbous. Fruit with a feathery pappus.
3. Fedia. Stam. 3. Cor. gibbous. Fruit crowned with unequal teeth.

1. Centránthus *De Cand.* Spur-Valerian.

Cor. 5-cleft, spurred at the base. *Stam.* 1. *Fruit* crowned with a feathery pappus.—Named from κεντρον, a *spur*, and ανθος, a *flower.*

1. C. * *rúber* D C. (*Red S.*); leaves ovate-lanceolate, spur much shorter than the tube of the corolla and twice as long as the ovary. Valeriana *L.*: *E. B.* t. 1531.

Chalk-pits and old walls in Kent, Isle of Wight, &c. ♃. 6—9—*Stem* 1 ft. or more high, glabrous, slightly glaucous. *Leaves* entire or slightly toothed. *Flowers* fine deep rose colour or white, arranged in numerous unilateral cymose spikes. Its native country is the extreme south of Europe, and N. of Africa.

[*C. Calcitrapa* Dufr. has been naturalised at Eltham in Kent.]

2. Valeriána *Linn.* Valerian.

Cor. 5-cleft, gibbous at the base. *Stam.* 3. *Fruit* crowned with a feathery *pappus.*—Named from *valeo, to be powerful*, on account of the medicinal effects.

1. V. *diòica* L. (*small marsh V.*); flowers imperfectly diœcious, root-leaves ovate-spathulate stalked, those of the stem lyrate-pinnatifid, fruit glabrous. *E. B.* t. 628.

Marshy meadows, frequent. ♃. 5, 6.—*Root* creeping. *Stem* 6—8 inches high. *Leaves* more or less serrate. *Flowers* of a pale rose-colour.

2. V. *officinális* L. (*great wild V.*); stem sulcate stoloniferous leaves all pinnatifid, leaflets lanceolate nearly uniform. *E. B.* t. 698.—*α.* petioles erecto-patent, leaflets 7—10 pairs dentate-serrate or entire. V. procurrens *Wallr.* V. augustifolia *Tausch.*—*β.* lower and middle petioles erect close-pressed, leaflets 4—5 pairs dentate-serrate. V. sambucifolia *Mik.*

Ditches, sides of rivers and moist woods, abundant. 4. 6—8. — *Roots* tuberous, warm, aromatic, and employed in medicine; cats are very fond of them, and their scent attracts rats. The leaves are much used by the poor as an application to fresh wounds, whence the common name of *All-heal*. Whole *plant* 2—4 ft. high. In our British forms the *stems* are perhaps always solitary from each root; but if *V. uliginosa* Wend. be also a *var.*, they are sometimes tufted. Lower *leaves* on long footstalks. *Flowers* pale flesh-coloured. *Fruit* glabrous or pubescent.

3. V. **Pyrenáica* L. (*heart-leaved V.*); leaves heart-shaped dentate-serrate petiolate, upper ones with one or two pairs of small lanceolate leaflets. *E. B.* t. 1591.

Woods in Scotland. 4. 6, 7. — It is peculiar to the Pyrenees, but much cultivated in gardens; and the seeds are easily transported by the wind.

3. Fédia *Vahl.* Corn-Salad.

Cor. gibbous at the base; the limb 5-cleft. *Stam.* 2—3. *Caps.* crowned with unequal teeth, indehiscent, 3-celled, 1-seeded; 2 *cells* abortive or empty, rarely confluent. (*Limb* of *cor.* equal, and *stam.* 3 in all the British species.) — Name given by Adanson, and supposed to be derived from *fedus* (the same as *hædus*), a *kid*, on account of the smell.

* *Fertile cell of fruit with a corky mass at the back.*

1. F. *olitória* Vahl (*common C.*, or *Lamb's Lettuce*); fruit laterally compressed oblique crowned with the 3 obscure inflexed teeth of the calyx, fertile cell corky at the back, sterile ones usually confluent, flowers capitate, bracteas leafy ciliato-dentate. Valeriana Locusta *L.*: *E. B.* t. 811.

Banks and corn-fields, especially in a light soil. ⊙. 4—6. — *Stem* 3 inches to a foot high, dichotomous, more or less rough. *Root-leaves* spathulate; those of the *stem* oblong, obtuse, entire or the upper ones a little toothed. *Flowers* pale blue, or rarely white, in terminal compact heads, at the base of which are linear-oblong often divided *bracteas* forming a kind of *involucre*. — Frequently cultivated as a salad.

** *Fertile cell not corky at the back.*

† *Empty cells conspicuous contiguous.*

2. F. *carináta* Stev. (*carinated C.*); capsule oblong with a wide usually concave groove in front glabrous crowned with the short straight bluntish limb of the calyx, the two empty cells thin and incurved at the edge, cymes capitate. *E. B. S.* t. 2810.

Church Stretton, Shropshire; and between Gresford and Wrexham. Jersey. ⊙. 4—6.

3. F. *Aurícula* Gaud. (*sharp-fruited C.*); capsule ovate acuminate, with a narrow groove in front glabrous crowned with the single entire or 3-toothed limb of the calyx, empty cells rounded on the back, larger than the fertile one, cymes lax.—*α.* calyx-limb nearly entire. *E. B. S.* t. 2809.—*β.* calyx-limb acutely 3-toothed. F. tridentata *Stev.* Valerianella dentata *DC.*

Corn-fields, near Hastings; near Bourton on the Water; Henbury, near Bristol; Devon, Isle of Wight. Jersey. Fifeshire. — *β.* Landulph, Cornwall: *Rev. R. T. Bree.* ☉. 6—8.—Habit of the last species, for which it is no doubt often passed over; but the *fruit* is quite different, being broader and more inflated, obscurely furrowed in front, with large empty *cells*, and crowned with the small *limb* of the *calyx*.

†† *Empty cells distant, obsolete or reduced to mere ribs.*

4. F. *dentáta* Vahl? (*smooth narrow-fruited C.*); capsule ovate flattish and 2-ribbed in front acuminate crowned with the prominent oblique unequally toothed calyx. — *α.* capsule glabrous, cup of the calyx small very oblique. Valeriana *Sm.*: *E. B.* t. 1370. Valerianella Morisonii *DC.*—*β.* capsule clothed with spreading incurved rigid hairs, cup of the calyx small oblique. F. mixta *Vahl.* — *γ.* capsule clothed with spreading incurved rigid hairs or glabrous, cup of the calyx large, a little oblique. F. eriocarpa *Roem.* et *Sch.*

α. Corn-fields and hedge-banks, not very common. Cornwall, Essex, Shropshire, and Cambridgeshire. N. Wales. Fifeshire. Jersey. — *β.* Hedge-banks, near Halesworth, Suffolk; Yorkshire; Isle of Wight. Fifeshire. — *γ.* Ormeshead, Caernarvonshire. ☉. 6—8. — *Flowers* flesh-coloured, usually in panicled cymes. *Fruit* obpyriform; convex on the back where is the larger and perfect cell, nearly plane in front where are the two abortive cells, and these are shrunk so as to form two projecting lines or ribs. The whole fruit is glabrous or nearly so in *α.*; in *β.* and usually in *γ.* it is clothed with patent incurved short hairs. In *γ.* the cymes are usually dense, but Mr. W. Wilson has satisfied us that it is merely a state of this species; Mr. Borrer observes that it has kept its peculiar habit six years in his garden. It is quite impossible, from Vahl's description, to pronounce whether this or *F. Auricula β.* be his *F. dentata*.

Ord. XLV. DIPSACACEÆ *Juss.*

Calyx-tube adnate with the *ovary*, surrounded by a scariose *involucel* closely investing the ovary and ripe fruit. *Corolla* with the *limb* oblique, with an imbricative æstivation *Stamens* 4—5; *anthers* distinct. *Ovary* 1-celled. *Style* 1, filiform. *Fruit* dry, indehiscent, 1-celled, with one pendulous *seed*, crowned with the pappus-like calyx. *Albumen* fleshy. — *Mostly* herba-

ceous plants, *with opposite or whorled* leaves. Flowers *pedicellate, collected into a dense head which is surrounded by a many-leaved involucre. Nearly allied to the* Compositæ. The Fuller's Teasel consists of the heads, with uncinate spines, of *Dipsacus Fullonum*.

1. DIPSACUS. Receptacle with spinous scales. Cal. cup-shaped. Fruit with 8 depressions.
2. SCABIOSA. Receptacle scaly. Cal. of about 5 bristles.
3. KNAUTIA. Receptacle hairy (not scaly). Cal. cup-shaped. Fruit with 4 depressions.

1. DÍPSACUS *Linn.* Teasel.

Receptacle with spinous scales. *Involucel* with a thickened limb, forming a *crown* to the ovary. *Cal.* cup-shaped. *Stam.* distinct about equal. *Fruit* 4-angled, with 8 pores or depressions. (*Leaves* opposite.)—Named from διψαω, *to be thirsty*; the upper connate leaves containing water in their hollows.

1. D. **Fullólum* L. (*Fuller's T.*); leaves sessile undivided, scales of the receptacle hooked at the extremity, involucres spreading or reflexed. *E. B.* t. 2080.

Waste places and hedge-banks; rare. ♂. 8, 9. — *Stem* 4—5 ft. high, very angular and prickly. *Leaves* large oblong or oblong-lanceolate, obtusely or irregularly serrate, sometimes, especially the upper ones, connate. *Involucre* about as long as the head of flowers. *Flowers* in oval heads, pale purple or whitish. —Used in dressing cloth, for which purpose the hooked scales of the receptacle are admirably calculated. These hooks become obsolete by long cultivation on a poor soil; and there is reason to believe that *D. Fullonum* is but a var. of *D. Sylvestris*.

2. D. *sylvéstris* L. (*wild T.*); leaves sessile undivided, upper ones connate, scales of the receptacle straight at the extremity, involucres curved upward. *E. B.* t. 1032.

Road-sides and hedges, not rare in England; less frequent in Scotland. ♂. 8, 9.

2. D. *pilósus* L. (*small T.*); leaves petiolate with a small leaflet at the base on each side, involucres shortly deflexed. *E. B.* t. 877.

Moist hedges, but not common. In several places in Norfolk and Suffolk, Sussex and Surrey. Rare in Scotland. ♂. 8, 9. — *Stem* slender, 2—4 ft. high, angular, rough with short reflexed prickles, which are longer and resembling bristles on the peduncles. *Leaves* ovate, acuminate, serrate. Heads of *flowers* rather small, round, hairy. *Scales* of the receptacle obovate-cuspidate, straight. *Corolla* white. *Anthers* white, much protruded.

2. SCABIÓSA *Linn.* Scabious.

Receptacle scaly. *Involucel* membranaceous or minute. *Cal.* of about 5 bristles. *Stam.* distinct, nearly equal. *Fruit* with 8

depressions.—Named from *scabies*, the *leprosy*; an infusion or decoction of some of the species having formerly been employed in curing cutaneous diseases.

1. S. *succísa* L. (*Devil's-bit S.*); segments of corolla 4 nearly equal, fruit angled with the depressions reaching nearly to the base and a very short crown, calyx-bristles conniving, cauline leaves dentate, heads of flowers nearly globose, leaves of the involucre in 2—3 rows. *E. B.* t. 878.

Meadows and pastures, common. ♃. 7—10.—*Root* as it were cut off abruptly or bitten (*radix præmorsa*). *Stems* nearly simple. *Leaves* hairy, rather stiff; *radical* ones ovate, mostly petiolate, those of the stem oblong. *Flowers* purplish-blue, or white.

2. S. *columbária* L. (*small S.*); corollas usually 5-cleft radiating, fruit subcylindrical with the depressions reaching to the base, limb of the involucel membranaceous entire patent about 20-nerved half the length of the fruit, stem hairy, radical leaves ovate crenate or lyrate, those of the stem pinnatifid with linear segments. *E. B.* t. 1311.

Pastures and waste places, most abundant on the east coast. Rare in Scotland; near Arbroath, with white fl.; plentiful near Montrose, and at Blackford; Berwickshire. ♃. 7, 8.—Scarcely a ft. high, hairy. Lower *leaves* on rather long *foot-stalks*; cauline ones cut into narrow, linear, or setaceous pinnæ. *Flowers* purplish-blue. *Involucre* of narrow leaves, longer than the flowers.

3. Knaútia *Linn.* Knautia.

Receptacles hairy, without scales. *Involucel* with a 4-toothed minute limb. *Cal.* cup-shaped with radiating teeth. *Stam.* distinct, nearly equal. *Fruit* upon a short stalk, 4-angled, with 4 pores or depressions.—Named in honour of *Christopher Knaut*, a botanist of Saxony, who flourished in the latter half of the 17th century.

1. K. *arvénsis* Coult. (*Field K.*); heads of many flowers, fruit crowned with very minute teeth, calyx with 8—16 somewhat awned teeth. Scabiosa *L.*: *E. B.* t. 659.

Pastures and corn-fields, frequent. ♃. 6—8.—*Stem* 2—3 ft. high. Radical *leaves* lanceolate, slightly serrate, hairy. Heads of *flowers* large, convex, lilac-purple: *outer florets* large, with their segments unequal, so that the lower ones form a sort of ray around the head; *inner florets* with equal segments.

Ord. XLVI. COMPOSITÆ *Juss.* (Tab. III. A., and Tab. IV. and V.)

Calyx adherent with the ovary, the *limb* entire or toothed or mostly expanded into a *pappus* which crowns the fruit.

Corolla regular or irregular, filiform or tubular or ligulate, very rarely wanting. *Stamens* 5 : *anthers* syngenesious in the perfect florets, furnished at the apex with a more or less evident *appendage*, and at the base with 2 *bristles* or *spurs*, or without any (*ecaudate*). *Ovary* 1. *Style* 1, sheathed in the perfect florets by the tube of the *anthers*, bifid at the apex when fertile. *Stigmas* forming two longitudinal rows along the inner surface of each *branch* of the style. *Fruit* an *achene* tapering to a beak, or without one, with a small or large epigynous disk. *Seed* erect, without *albumen*. *Embryo* straight. *Radicle* opposite the *hilum*.—Stems, *in the British genera, herbaceous*. Leaves *opposite or alternate*. Flowers *or* florets[1] *collected into a* head (compound flower, *L.*) *inserted upon a broad* receptacle (*which is either furnished with chaffy* scales *or naked*) *and surrounded by an* involucre (calyx, *L.*). The properties in so extensive an Order are very varied ; but, generally speaking, those of — Tribe 1. CICHORACEÆ, are bitter and narcotic, abounding in milky juice. — Tribe 2. CYNAROCEPHALÆ, bitter and tonic. — Tribe 3. CORYMBIFERÆ, aromatic, stimulant, containing bitter principle and essential oil.

I. Florets all ligulate and perfect. CICHORACEÆ.

* *Pappus of all, or of the central florets, plumose.*

† *Receptacles naked.*

1. TRAGOPOGON. Involucre single of 8—10 connected scales.
2. HELMINTHIA. Involucre with external foliaceous scales. Achenes beaked.
3. PICRIS. Involucre with external small scales. Achenes scarcely beaked.
4. APARGIA. Involucre unequally imbricated. Pappus of all the achenes plumose.
5. THRINCIA. Involucre unequally imbricated. Pappus of outer achenes short and scaly.

†† *Receptacles with chaffy scales.*

6. HYPOCHŒRIS. Involucre unequally imbricated.

[1] When all the florets are perfect (containing both anthers with pollen and a fertile pistillum), the *heads* are said to be *homogamous* (as in *Leontodon*, *Carduus*, and *Diotis*) ; when some only of the florets are perfect, the *heads* are *heterogamous* (as in *Centaurea Cyanus*, *Gnaphalium*, and *Bellis*) ; when all the florets are alike, having either fertile stamens, or a fertile pistillum, but not both, the *heads* are *dioecious*, and then they may be on the same individual (as in *Xanthium*), or on different ones (as in *Antennaria*), the *genus* or *species* being itself *monoecious* or *dioecious* ; when some of the florets in a head have fertile stamens, but not a fertile pistillum in the disk, while those of the circumference have a fertile pistillum, the *heads* are said to be *monoecious* ; and when the heads are monoecious, and one individual bears heads with numerous staminate and few pistillate florets, and another numerous pistillate and few staminate florets, the *genus* is said to be *subdioecious* (*Petasites*). When all the florets are similar in colour, they are said to be *homochromous* (as in *Solidago*, and *Inula*) ; when the ray is of a different colour from the disk, they are *heterochromous* (as in *Bellis*).

** *Pappus pilose, filiform.*

† *Achenes much compressed. Involucre of fruit erect.*

7. LACTUCA. Beak of achenes filiform. Pappus very soft and flaccid. Invol. few-flowered.
8. MULGEDIUM. Beak very short, constricted between the achene and the disk. Pappus stiff and brittle. Involucre many-flowered.
9. SONCHUS. Beak 0. Pappus very soft and flaccid. Invol. many-flowered.

†† *Achenes nearly terete, or angled at the base.*

10. CREPIS. Pappus nearly white, soft, deciduous. Achenes without a beak, or with a very short one, longitudinally striate.
11. BORKHAUSIA. Pappus white, soft, deciduous. Achenes terete. Beak long. Involucre of fruit oval, erect, ribbed and furrowed.
12. LEONTODON. Pappus white, soft, deciduous. Achenes sub-compressed. Beak long. Invol. of fruit reflexed.
13. HIERACIUM. Pappus brown, brittle. Beak 0.

*** *Pappus neither filiform nor plumose. Receptacle naked.*

14. LAPSANA. Pappus none, or a mere rim to the achene.
15. CICHORIUM. Pappus of all the florets of erect scales.

II. Florets all tubular, homogamous, or those of the ray neuter. Style swollen below its branches. CYNAROCEPHALÆ.

* *Scales of the involucre with a hooked point. Achenes glabrous.*

16. ARCTIUM. Anthers with 2 bristles at the base; appendages filiform.

** *Scales of the involucre not hooked at the point.*

† *Pappus of several rows, conspicuously unequal; inner row the longest, much longer than the glabrous achene.*

17. SERRATULA. Pappus pilose, hairs filiform. Anthers ecaudate at the base; appendages obtuse.
18. SAUSSUREA. Inner pappus plumose, hairs thickened at the base. Anthers with 2 bristles at the base; appendages long, acute.

†† *Pappus equal, long; hairs united at the base into a ring. Achenes glabrous.*

19. CARDUUS. Pappus pilose. Achenes compressed. Receptacle bristly. Anthers without bristles.
20. CNICUS. Pappus plumose. Achenes compressed. Receptacle bristly. Anthers without bristles.
21. ONOPORDUM. Pappus pilose. Achenes 4-ribbed. Receptacle honey-combed. Anthers shortly caudate at the base.

††† *Pappus single, long, plumose; hairs unequally united at the base. Achenes silky.*

22. CARLINA. Inner scales of invol. long, coloured and radiating. Anthers bicaudate; appendages long.

†††† *Pappus* 0, *or short* (*equal to, or shorter than the achenes*).

23. CENTAUREA. Ray frequently without stamens or pistils.

III. Florets of the same head all homogamous (and usually tubular); or those of the circumference filiform or tubular and pistillate, or ligulate. Style of the perfect florets not swollen below its branches. CORYMBIFERÆ.

1. *All the florets with corollas. Involucre not prickly.*

* *Pappus of 2—5 persistent awns.*

24. BIDENS. Receptacle with scales. Achenes compressed or angular.

** *Pappus 0, or a mere border, or of short teeth or scales only.*

† *Receptacle with scales. Pappus 0.*

45. ANTHEMIS. Heads heterogamous, with a ray. Florets of the ray oblong-linear. Achenes terete, or obscurely angled.

45ª. ANACYCLUS. Heads heterogamous with a ray. Florets of the ray oblong-linear. Achenes compressed, winged at the edges.

46. ACHILLEA. Heads heterogamous, with a distinct ray. Florets of the ray, short obovate. Achenes compressed.

25. DIOTIS. Heads homogamous, discoid. Florets and achenes compressed.

†† *Receptacle without scales.*

12. BELLIS. Heads heterochromous. Florets of the ray ligulate, conspicuous. Scales of the invol. nearly equal in length. Achenes compressed; epigynous disk minute.

27. ARTEMISIA. Heads discoid, homochromous; ligulate florets, when present, short or filiform. Invol. imbricated. Achenes with a minute epigynous disk.

26. TANACETUM. Heads discoid homochromous and homogamous, or the florets of the circumference with a short ligule. Achenes with a large epigynous disk.

44. MATRICARIA. Heads heterochromous, florets of the ray conspicuously ligulate, of the disk terete. Achenes of the disk and ray similar, angled. Epigynous disk large.

43. CHRYSANTHEMUM. Florets of the ray conspicuously ligulate, of the disk compressed at the base. Achenes of the disk somewhat terete. Epigynous disk large.

*** *Pappus pilose. Heads discoid. Florets all perfect.*

28. EUPATORIUM. Style much exserted, with long blunt branches. (Flowers never yellow.)

29. LINOSYRIS. Style slightly longer than the cor. Invol. loosely imbricated, or of one row of equal scales, surrounded by several long ones. Achenes compressed. (Flowers yellow.)

37. SENECIO. Style slightly longer than the cor. Invol. cylindrical or conical, of one row of equal scales with several small ones at the base. Achenes terete.

**** *Pappus pilose. Heads discoid. Florets of the circumference, or all, imperfect.*

30. ANTENNARIA. Dioecious. Heads dioecious. Invol. imbricated, dry and scarious.

31. GNAPHALIUM. Heads heterogamous, all similar. Invol. imbricated, dry and scarious. Recept. flat and quite naked.

32. Filago. Heads heterogamous. Invol. imbricated, dry and scarious. Recept. conical, with 1—5 rows of scales among the outer florets.
40. Inula. Heads heterogamous. Invol. imbricated, herbaceous. Florets of the ray in a single row, with a narrow ligule. Anthers with bristles at the base.
35. Erigeron. Heads heterogamous. Invol. imbricated in several rows. Florets of the ray in several rows, with a narrow ligule. Anthers without bristles at the base.
33. Petasites. Subdiœcious. Heads monœcious. Invol. in a single row, herbaceous, with one external row of scales. Fertile florets filiform, truncated.
33a. Homogyne. Heads heterogamous, with a single row of filiform pistillate florets in the circumference. Involucre in a single row, with an external row of scales. Style with long papillose branches. Anthers without bristles at the base.

***** *Pappus of the florets of the disk pilose. Heads heterogamous with a conspicuous ligulate ray.*

† *Anthers almost naked at the base.*

‡ *Florets of the ray with a pilose pappus.*

34. Tussilago. Florets of the ray in many rows. Invol. nearly simple. Achenes terete. (Florets homochromous.)
35. Erigeron. Florets of the ray in several rows. Invol. evidently imbricated. Achenes compressed. (Florets heterochromous.)
36. Aster. Florets of the ray many in a single row. Invol. imbricated. Achenes compressed. (Florets heterochromous.)
37. Solidago. Florets of the ray few (about 5) in a single row. Invol. much imbricated. Achenes terete.
38. Senecio. Florets of the ray in a single row. Invol. subcylindrical, of one row of equal scales, with or without smaller ones at its base. Achenes terete.

‡‡ *Florets of the ray without a pappus.*

39. Doronicum. Scales of the invol. of 2—3 rows, nearly equal. Achenes terete.

†† *Anthers with 2 bristles at the base. Florets of the ray in a single row.*

40. Inula. Pappus in a single row, pilose.
41. Pulicaria. Pappus in 2 rows; outer row short, cup-like, membranous, toothed; inner pilose.

2. *Fertile florets without cor. Heads monœcious. Fertile invol. prickly.*

47. Xanthium. Monœcious. Fertile invol. 2-flowered. Pappus 0.

Tribe I. Cichoraceæ. Chicory or Lettuce Tribe. (Tab. III. A.)

All the florets with ligulate corollas and perfect (having both stamens and pistils). Style not swollen beneath its branches. Gen. 1—14.[1]

[1] At Tab. III. A. is a very familiar example of this group in the *Dandelion* (*Leontodon Taraxacum*), where all the flowers or florets (f. 2.) are ligulate or strap-shaped and perfect.
Fig. 1. Head of flowers in bud, the young involucre alone being visible.

* *Pappus of all or of the central florets plumose.* (Gen. 1—6.)

1. Tragopógon *Linn.* Goat's-beard.

Achenes longitudinally striate, beaked. *Pappus* feathery. *Recept.* naked. *Involucre* simple, of 8—10 scales united at the base. —Named from τραγος, a *goat;* and πωγων, a *beard;* from the beautifully bearded fruit.

1. T. *praténsis* L. (*yellow G.*); glabrous, involucre about as long or twice as long as the corollas, leaves undivided acuminate with a dilated base channelled, peduncles slightly thickened at the very summit. — *α.* involucre about as long as the corollas. *E. B.* t. 434. — *β.* involucre twice as long as the corollas. T. minor *Fries.* T. major *Hook. Br. Fl.* ed. 2. (not perhaps of *Jacq.*)

Meadows and pastures. Scotland. Ireland. ♂. 6, 7. — *Stem* 1—2 ft. high. *Leaves* of *β.* more attenuate than in *α.* *Involucre* 8-leaved. *Flowers* yellow, closing every day before noon; head of *fruit* large. *Achenes* of the florets of the circumference striate and squamously scabrous in this and the next. *Pappus* very feathery, elevated on a long stalk.

2. T. **porrifólius* L. (*purple G.* or *Salsafy*); involucre longer than the corollas, leaves undivided straight acuminate slightly dilated above the base, peduncles much thickened upwards. *E. B.* t. 638.

Moist meadows, in several parts of England; but very local. About Glasgow. ♃. 5, 6. — *Stem* 3—4 ft. high. *Flowers* large, purple, closing before noon, or in rainy weather. The *root* was formerly cultivated for culinary purposes.

2. Helmínthia *Juss.* Ox-tongue.

Achenes transversely striate, beaked. *Pappus* feathery. *Recept.* naked. *Involucre* double; inner of 8—10 close scales, outer of 3—5 shorter, lax, leafy ones.—Name: ἑλμινθιον, a small kind of *worm;* from the form of the fruit.

1. H. *echioídes* Gærtn. (*bristly O.*); outer scales of the in-

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Fig. 2. A single flower or floret, removed from the receptacle, showing (at *a*) the ligulate corolla; (*b*) the germen (ovary or young fruit) covered with the tube of the calyx, which is lengthened above, in a curious manner, into a little stalk or beak, and crowned with the pappus or seed-down, which is, in fact, the limb or free portion of the calyx, within which the corolla is inserted; (*c*) the stamens, the filaments of which are inserted into the lower or tubular portion of the corolla, and the five anthers are united into a tube around the style; (*d*) the style, continued from the top of the germen, through the corolla and united stamens, dividing into two branches, which bear the minute stigmas. This style is not swollen, as in the Thistle group.

Fig. 3. Extremity of the style.

Fig. 4. A receptacle, with the involucre bent back in age, and all the fruit and seed-vessels having fallen away but one.

Fig. 5. A fruit laid open, showing the erect seed in the cavity or cell.

All but figs. 1. and 2. more or less *magnified.*

volucre 5 cordate crenate, stem erect hispid. Picris *L.*: *E. B.* t. 972.

Borders of fields, especially in a clayey soil. In Scotland, near Berwick-upon-Tweed, very rare. About Dublin. ♃. 6—10.—*Stem* 2—3 ft. high, stout, hispid, with numerous rigid hairs, springing from tubercles. Lower *leaves* lanceolate; upper ones cordate, amplexicaul. *Flowers* small, yellow.

3. Pícris *Linn.* Picris.

Achenes transversely striate, with scarcely any beak. *Pappus* with the inner hairs feathery. *Recept.* naked. *Involl.* of many compact, upright, equal scales, with several external small linear ones.—Name: πικρος, *bitter*, as are many of this tribe.

1. P. *hieracioídes* L. (*Hawk-weed P.*); stem rough with hooked bristles, leaves lanceolate rough toothed, flowers corymbose, peduncles with many bracteas, outer scales of the involucre linear-oblong lax bristly on the keel. *E. B.* t. 196.

Road-sides and borders of fields, frequent. ♃. 6—10.—Not found in Scotland. *Stems* 2—3 ft. high. *Flowers* yellow. *Pappus* of the marginal and central florets alike.

4. Apárgia *Schreb.* Hawkbit.

Achenes beaked. *Pappus* feathery. *Recept.* naked. *Involl.* unequally imbricated, with hirsute black scales.—Name: απαργια, some uncertain weed known to the Greeks which sprung up απο, *from*, αργια, the *idleness* of the cultivator.

* *Pappus with an outer row of bristles.*

1. A. *híspida* Willd. (*Rough H.*); scape single-flowered thickened upwards slightly hispid naked or with 1—2 minute scales, leaves runcinate hispid with forked hairs, flowers drooping in bud, involucre hairy. Hedypnois *Huds.*: *E. B.* t. 554. Leontodon *L.*

Meadows, pastures, and gravelly heaths, frequent. ♃. 6—9.

** *Pappus simple.* (Oporinia *Don.*)

2. A. *autumnális* Willd. (*autumnal H.*); scape scaly upwards, leaves lanceolate toothed or pinnatifid nearly glabrous, peduncles swollen beneath the involucres.—α. leaves nearly glabrous, scape branched, involucres somewhat downy. Hedypnois *E. B.* t. 830. Oporinia *Don.*—β. leaves glabrous, scape almost simple, involucre clothed with blackish hairs. Hedypnois Taraxaci *E. B.* t. 1109.—γ. leaves hairy, scapes branched, involucres with dark hairs.

Meadows and pastures, frequent. β. on mountains. γ. in Highland glens. ♃. 8.—*Involucre* cylindrical, and tapering gradually

into the *pedicel.* *Flowers* moderately large yellow. *Pappus* brownish-white.

5. Thríncia *Roth.* Thrincia.

Achenes tapering into a beak, the outer ones enveloped by the leaves of the involucre. *Pappus* of the marginal florets forming a short scaly cup, of the rest long, feathery. *Recept.* naked. *Invol.* imbricated.—Name: Θριγκος, a *battlement;* from the resemblance of the seed-crown of the marginal florets to the battlements of a wall.

1. T. *hírta* Roth (*hairy T.*); leaves lanceolate sub-sinuato-dentate somewhat hispid with frequently forked hairs, scapes single-flowered ascending glabrous below. Hedypnois *E. B.* t. 555.

Gravelly pastures and moors. ♃. 7, 8.—In small starved specimens, the *leaves* are frequently runcinate. Scales of the *involucre* glabrous, or more or less hairy. The outer *pericarps*, which have *scales* for a *pappus*, are often abortive and smooth; the inner ones are beautifully striate and marked with raised dots.

6. Hypochœ'ris *Linn.* Cat's-ear.

Achenes striate, often beaked. *Pappus* feathery. *Receptacle* chaffy. *Involucre* oblong, imbricated.—Name from ὑπο, *for*, and χοιρος, a *hog;* the roots being eaten by that animal.

* *Pappus with an outer row of scabrous hairs.*

1. H. *glábra* L. (*smooth C.*); nearly glabrous, involucre oblong regularly imbricated equalling the florets, achenes of the central florets beaked, stem branched somewhat leafy, radical leaves dentato-sinuate.—*α.* achenes of the circumference without a beak. *E. B.* t. 575.—*β.* achenes of the circumference beaked. H. Balbisii *Loisel.*

Fields and gravelly soils in many places, but not very common. *β.* In Kent and Shropshire. ☉. 6—10.—*Stem* 1 ft. or more high. *Leaves* oblong, with a few scattered hairs. *Flowers* small, yellow. The *var. β.* may be a distinct species; but we have not seen British specimens, and our foreign ones are not sufficiently numerous to enable us to decide.

2. H. *radicáta* L. (*long-rooted C.*); stem branched leafless glabrous, peduncles with small scales, involucres shorter than the florets, scales acuminate, leaves runcinate obtuse scabrous. *E. B.* t. 831.

Meadows, pastures and way-sides, frequent. ♃. 7.—*Leaves* all radical, spreading on the ground. *Stem* 1 ft. or more high. *Peduncles* a little thickened upwards. *Flowers* rather large, yellow. *Achenes* of all the florets beaked.

*** Pappus in a single row.*

3. H. *maculáta* L. (*spotted C.*); stem almost leafless solitary nearly glabrous, leaves obovate-oblong undivided toothed (spotted above), involucres slightly hispid. *E. B.* t. 225. Achyrophorus, *Scop.*

In open chalky and limestone pastures, rare. Suffolk; Cambridgeshire. Ormeshead, N. Wales. ♃. 7, 8.—*Leaves* almost all radical, scabrous. *Stem* or *scape* with one, or rarely 3—5, large deep yellow *flowers* and 2 or 3 small lanceolate *scales* or *bracteas.*

*** Pappus pilose filiform.* (Gen. 7—12.)

7. Lactúca *Linn.* Lettuce.

Achenes much compressed, with a long beak. *Pappus* pilose. *Receptacle* naked. *Involucre* imbricated, cylindrical, few-flowered, its scales with a membranous margin.—Named from *lac*, milk, which flows from this and many plants of the tribe, when broken.

** Beak of achenes elongated (white). Keel of leaves prickly.*

1. L. *virósa* L. (*strong-scented L.*); leaves patent oblong toothed or sinuate two-eared and amplexicaul at the base, flowers panicled, beak as long as the (black) achene. *E. B.* t. 1957.

Banks and way-sides, especially in a chalky soil. Rare in Scotland; about Edinb., Dunkeld, Coldstream, Melrose and Stirling Castle. ☉. 4—8.—*Stems* 3—4 feet high, erect, prickly, with distant *leaves*. *Root-leaves* obovate, numerous.—The plant abounds with a milky and narcotic juice, which is considered by some practitioners as a gentle and safe opiate. *Flowers* small, yellow.

2. L. *Scaríola* L. (*prickly L.*); leaves nearly upright lanceolate sagittate at the base sinuate ciliato-dentate, panicle leafy, beak as long as the (pale) achene. *E. B.* t. 268.

Waste ground, rare. Cambridgeshire; Southend, Essex; Sussex and the southern counties. ♃. 7, 8.—Of milder quality and paler colour than the last, with more upright *branches* and *leaves* and pale *achenes*. The *Garden Lettuce* is *L. sativa* L., not a native.

3. L. *salígna* L. (*least L.*); root-leaves lanceolate with few teeth, lower cauline ones pinnatifid, upper ones linear-lanceolate entire sagittate, flowers lateral with small floral leaves, beak thrice as long as the fruit. *E. B.* t. 707.

Chalky waste ground and salt-marshes, in the south-east of England. ☉. 7, 8.—Whole *plant* slender; *branches* twiggy; the small *flowers* may be said to be almost spicate.

*** Beak short. Keel of leaves smooth.*

4. L. *murális* Less. (*Ivy-leaved L.*); florets 5, leaves lyrate-

pinnatifid and toothed the terminal lobe angled, panicle with divaricated branches, beak much shorter that the (black) achene. Prenanthes *L.: E. B.* t. 457.

On old walls and in woods. ♃ or ♂. 6—8. — *Stem* 2 ft. high, panicled above. *Flowers* small yellow.

8. Mulgédium *Cass.* Blue Sow-thistle.

Achenes much compressed, constricted above the seed and terminated by a slightly dilated disk. *Pappus* brittle. *Recept.* naked. *Invol.* many-flowered, double: inner of one row of equal scales; outer of imbricated short lax ones.—Named from *mulgeo*, to *milk*, on account of the milky juice.

1. M. *alpínum* Less. (*alpine B.*); flower-stalks racemose and bracteas and involucre glandulose-hispid, stems glabrous below, leaves glabrous lyrate sagittate at the base, terminal lobe very large deltoideo-hastate. Sonchus cæruleus *E. B.* t. 2425.

Rocky places, near rivulets. Loch-na-gar and Clova mountains, and in their vicinity. ♃. 7, 8. — Flowers blue.

9. Sónchus *Linn.* Sow-thistle.

Achenes much compressed, without a beak. *Pappus* pilose. *Recept.* naked. *Invol.* imbricated, with 2—3 rows of unequal at length connivent scales, tumid at the base, few-flowered.—Named σογχος, in Greek, perhaps from σομφος, *hollow*, in allusion to the hollow stems.

* *Root perennial.*

1. S. *palústris* L. (*tall marsh S.*); heads corymbose, peduncles and involucre glandulose-hispid, leaves clasping the stem with long acute sagittate auricles, lower ones runcinate-pinnatifid with few segments, upper ones entire, stem simple, root without scions. *E. B.* t. 935.

Marshy places, rare. Isle of Ely; Greenwich; Blackwall; Croydon; Wouldham, Kent. ♃. 7, 8. — *Stem* 6—8 ft. high. *Flowers* large yellow.

2. S. *arvénsis* L. (*Corn S.*); heads corymbose, peduncles and involucre glandulose-hispid, leaves denticulate clasping the stem with short obtuse auricles, lower ones sinuato-runcinate, upper ones oblong-lanceolate entire, stem simple, root with creeping scions. *E. B.* t. 674.

Corn-fields, frequent. ♃. 8, 9. — *Stems* 3—4 ft. high. *Flowers* very large yellow.

** *Root annual.*

3. S. *oleráceus* L. (*common annual S.*); head subumbellate, involucre glabrous, leaves undivided or pinnatifid toothed, lower

ones stalked, upper ones lanceolate clasping the stem with spreading sagittate auricles, fruit longitudinally ribbed and transversely rugose. — *α.* leaves divided. *E. B.* t. 843. — *β.* leaves entire.

Waste places and cultivated ground, common. ⊙. 6—8. — *Stem* 2—3 ft. high. *Flowers* small, yellow. *Involucre* conical when in seed.

4. S. *ásper* Hoffm. (*sharp-fringed annual S.*); heads subumbellate, involucre glabrous, leaves undivided or pinnatifid sharply toothed all lanceolate clasping the stem with rounded auricles, stem branched, fruit longitudinally ribbed without transverse wrinkles. — *α.* leaves undivided. *E. B. S.* t. 2765.— *β.* leaves divided. *E. B. S.* t. 2766.

Waste places and cultivated ground, common. ⊙. 6—8. — Perhaps a mere variety of the last.

10. Crépis *Linn.* Hawk's-beard.

Achenes terete or angled, narrower upwards or obscurely beaked, striate. *Pappus* pilose, copious, soft, mostly white, deciduous. *Recept.* naked. *Invol.* scaly at the base. — Name: given by Pliny to some plant, from κρηπις, a *scandal*, which the leaves were supposed to resemble.

1. C. *vírens* L. (*smooth H.*); leaves glabrous runcinate or pinnatifid, the upper ones linear sagittate amplexicaul, the margins plain remotely toothed, stem glabrous, panicle subcorymbose, outer involucral scales appressed linear, inner ones glabrous within, fruit oblong slightly narrower upwards with smooth ribs shorter than the pappus. C. tectorum *E. B.* t. 1111.

Dry pastures, roofs of cottages, &c. ⊙. 6—9. — *Stems* 1—3 ft. high. *Radical leaves* more or less pinnatifid or runcinate, their teeth or segments often horizontal, sometimes curved upwards. *Flowers* small, yellow. *Pappus* about as long as the *involucre*, which is at length ovate and ribbed.

2. C. *biénnis* L. (*rough H.*); leaves rough runcinate-pinnatifid, uppermost lanceolate amplexicaul dentato-pinnatifid, panicle subcorymbose, involucre downy, outer scales oblong-linear lax, inner ones downy within, fruit oblong with smooth ribs narrower upwards, longer than the pappus. *E. B. S.* t. 2929. fig. *b*.

Chalky pastures in England, rare. Littlebury, near Saffron-Walden, Essex: Madanscourt-hill, Kent; Twycross, Leicestershire; and Cambridgeshire. ♂. 6, 7. — *Stems* 2—4 ft. high, furrowed, rough above. *Flowers* much larger than in the preceding. *Involucre* about as long as the *pappus*, outer *scales* almost glabrous. *Pappus* very white, and upon a *fruit* so attenuated upwards as to form a stalk.

3. C. **púlchra* L. (*small-flowered H.*); leaves downy toothed,

radical ones oblong-obovate, the rest sagittato-amplexicaul, panicle corymbose spreading, achenes very obscurely striate about as long as the pappus, involucre glabrous, outer scales ovate minute appressed. *L.: E. B.* t. 2325.

"Among the débris of the rocks on the hills of Turin and Pitsandy," near Forfar, Scotland; "but very rare."— *G. Don.* (Not found there by any other person.) ☉. 6—9.— *Root-leaves* tapering into a foot-stalk; *cauline* ones broad, clasping the stem with their toothed bases. The very few specimens from Don, which we have seen, are more luxuriant than Smith's acknowledged cultivated one, from which the figure in E. Bot. was made.

4. C. *succisæfolia* Tausch (*Succory-leaved H.*); leaves oblong-obtuse nearly quite entire the lower ones attenuated into a petiole, upper ones sessile and somewhat amplexicaul, stem tall panicled upwards, peduncles and involucres glandular hairy, the scales lanceolate attenuated outer ones very short appressed, achenes much striate compressed slightly narrower upwards as long as the pappus, pappus rather shorter than the involucre. Hieracium molle *Jacq.: E. B.* t. 2210.

Woods; Scotland. Near Forfar, Falls of the Tummel, Glen Luss, also in Langton woods, and near Renton, Berwickshire. ♃. 7, 8.— This plant varies much in the hairiness of its leaves.

5. C. *paludósa* Mœnch (*Márs h H.*): glabrous, radical leaves ovate-oblong runcinate-dentate attenuated into a foot-stalk, cauline ones lanceolate much acuminate heart-shaped and amplexicaul at the base, stem erect branched upwards and subcorymbose, involucre glandular hairy, achenes striate scarcely narrower upwards about as long as the pappus. Hieracium *L.: E. B.* t. 1094.

Frequent in moist woods and rocky places. ♃. 7—9.— *Stem-leaves* usually toothed, sometimes entire. *Pappus* in a single row, and more rigid and brittle than in any others of the genus.

11. Borkhaúsia *Mœnch.* Borkhausia.

Achenes terete, transversely wrinkled, with a long subulate beak. *Pappus* pilose. *Recept.* naked. *Involucre* oval, with deciduous subulate scales, at length ribbed and furrowed.— Named in honour of *Moritz Borkhausen*, a German Botanist.

1. B. *fœtida* DC (*stinking B.*); leaves hairy, lower cauline ones sessile runcinato-pinnatifid, unexpanded heads drooping, involucre hairy and downy, its outer scales lanceolate acute, achenes of the margin slightly beaked and scarcely so long as the involucre, the central ones long-beaked with the pappus entirely protruded. Crepis *L.: E. B.* t. 406.

Dry chalky ground, are. Suffolk, Cambridge, Norfolk, and Kent. ♂. 6, 7.— *Stem* spreading, its upper *leaves* lanceolate, cut

at the base. *Heads* solitary, on long simple stalks. *Corollas* red externally. The herb is very milky, and said to diffuse a smell resembling bitter almonds.

2. B. *taraxacifólia* DC. (*small rough B.*); leaves scabrous, lower cauline ones runcinato-pinnatifid sessile, heads erect, involucre bristly and downy longer than the uniformly beaked achenes, outer scales ovato-lanceolate membranaceous-margined, bracteas herbaceous linear. Crepis *E. B. S.* t. 2929. C. biennis *E. B.* t. 149.

Chalky pastures in England; Kent, Suffolk, Essex, Surrey. Caernarvonshire, N. Wales. ♂. 6, 7.—*Leaves* mostly radical, stalked, lyrato-runcinate or pinnatifid, with the terminal lobes large: upper cauline ones linear-lanceolate with linear lobes near the base. *Heads* in an irregular corymb. *Achenes* with rough ribs, and all of them with a beak nearly their own length.

[*B. setosa* DC. (Crepis *E. B. S.* t. 2945), which has the achenes uniformly beaked, and the outer scales of the involucre small linear-spreading and scarcely membranaceous-margined, has been occasionally found in fields, but is not indigenous.]

12. Leóntodon *Linn.* Dandelion. (Tab. III. A.)

Achenes terete, or slightly angled at the base, compressed upwards, with a very long slender beak. *Pappus* pilose. *Recept.* naked. *Involucre* many-flowered, imbricated with scales, of which the outermost are frequently lax and flaccid.—Named from λεων, a *lion*, and οδους, a *tooth*, from the tooth-like margins of the leaves.

1. L. *Taráxacum* L. (*common D.*); leaves runcinate toothed —*α*. outer scales of the involucre reflexed. *E. B.* t. 510. Taraxacum officinale *Wigg.* T. Dens Leonis *Desf.* —*β*. scales of the involucre erect appressed. L. palustre *Sm. E. B.* t. 553. Tar. palustre *DC.*

Meadows and pastures, common.—*β*. Wet open pastures and moors. 4. 3—10.—We only notice the two extreme vars., but there are several intermediate forms. The lowermost *leaves* are sometimes obovate, and not runcinate. *Fruit* linear-obovate, obtuse, muricated towards or at the apex, longitudinally striate, usually pale, but sometimes reddish-yellow or even bright red.

13. Hierácium *Linn.* Hawk-weed.[1]

Achenes angular, furrowed, with an entire or toothed margin at the top without a beak. *Pappus* pilose, in one row, frequently

[1] In the Symb. ad Hist. Hier. (Nov. Act. Reg. Soc. Scient. Vol. Ups. xiii. xiv.) of Fries, he notices (either by referring to plates or specimens) no fewer than 32 species natives of Britain: many of these we cannot identify satisfactorily by his characters, and we have not access to authentic specimens. We shall not attempt to arrange our species in the order proposed by Fries, as we cannot retain entire either his principal groups or subdivisions, not being able to satisfy ourselves of the validity of the characters proposed. Fries places great dependence on the

brownish, persistent and brittle. *Receptacle* nearly naked, dotted. *Involucre* imbricated.—Name: ἱερακιον, name of a plant; so called from ἱεραξ, a *hawk;* because birds of prey were imagined to employ this plant to strengthen their powers of vision.

1. *Plants producing scions. Ligules glabrous at the apex. Achenes minute, striate: hairs of the pappus equal, very slender*

1. H. *Pilosélla* L. (*common Mouse-ear H.*); leaves entire elliptic-lanceolate or lanceolate hairy with dense stellate down beneath, primary stem 1-headed leafless, involucre ovate at the base, inner scales acute and narrower than the outer ones. *E. B.* t. 1093.

Banks and dry pastures, frequent. ♃. 5—8.—*Florets* of a pale lemon-yellow, those of the ray with red stripes on the back. The leafy scions (*stolons*) sometimes produce a flowering terminal stem in the plants of this section; and we must carefully distinguish such from the primary or true stem.

[We omit here *H. dubium* Huds. not Linn. as it is now quite uncertain what plant was intended; the description given by Woodward in With. Bot. Arr., and the fig. in *E. B.* t. 2332, both of garden specimens, belonging to *H. stoloniferum* W. and K., while Smith's description in the Engl. Fl. is taken from *H. Auricula* L. We also omit *H. Auricula* L. said to have been found in Westmoreland, the description and figure, *E. B.* t. 2368, given by Smith, being taken from a Swiss specimen of *H. glaciale* Lach.

2. H. **aurantiácum* L. (*Orange H.*); leaves entire obovato-lanceolate green with longish hairs and no stellate down on both sides, scape leafy near the base hairy bearing a corymb of many flowers, involucre blackish and hispid with black hairs, inner scales broadest obtuse. *E. B.* t. 1469.

Hilly woods in various parts of England and Scotland, but an outcast from cottage gardens, where it is common. ♃. 6, 7.—Hairs long upon the upper part of the *scape;* black at the base, as they are upon the involucre, mixed with black setæ; hence often called *Grim-the-Collier*. *Flowers* deep orange. *Style* dark brown.

2. *Plants producing (in autumn) a tuft of spreading leaves about the root. Achenes large. Hairs of the pappus unequal.*

3. H. **villósum* L. (*shaggy H.*); leaves glaucous without glands shaggy with long soft flexuose hairs, upper ones ovate

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colour of the style, that being said to be either permanently yellow, or covered, when old and dried, with short dark hairs. The ligules being ciliated (furnished with a few hairs), or glabrous at the apex, is usually of consequence: but this character must be looked for in the unexpanded florets.—As in the genera *Rosa* and *Rubus*, we shall for brevity call the rigid hairs bearing glands by the name of *setæ;* but these setæ pass gradually into black hairs tipped with a white hair instead of a gland, and these again into ordinary hairs either with or without a bulbous black base; so that characters obtained from them cannot be of great value.

somewhat amplexicaul, involucre much imbricated villous pale, all the scales elongated and acuminate, the outer ones subfoliaceous lax, ligule glabrous at the back and apex.

Near Loch Callater, north of Clova, and Loch-na-Gar, Scotland. ♃. 7, 8. — The last station is mentioned upon the authority of a specimen in the York museum, but by whom collected is unknown to us; for the first Mr. T. Drummond is quoted as the authority. We ourselves have a specimen from Mr. Drummond marked from Clova, but which has quite the aspect of a cultivated one, and was probably obtained from Don's, afterwards Drummond's garden at Forfar, where it was supposed to be the plant of *E. B.* t. 2379, which however it is not. It has been seen in our mountains by no living botanist, and we do not believe that it is a British species.

4. H. *Fricum* Fries (*Irish H.*); glaucous, stem leafy simple corymbose or forked at the top, radical leaves oblong acute toothed about the middle hairy on the margin and beneath with shaggy winged short petioles, cauline ones sessile or amplexicaul ovate acuminate entire towards the point, involucre truncate below blackish when dry and the peduncle with setæ and grey black-based hairs, inner scales blunt and nearly glabrous, ligules glabrous, styles livid. H. Lapeyrousii *Bab.: in E. B. S.* t. 2906.

Garra Head, Antrim. Teesdale. Braemar. ♃. 7, 8. — The hairs on the petioles are conspicuously denticulate. In the uncertainty that prevails as to what is a species in this genus, we have drawn up the above character from Teesdale specimens only, said to have been identified with those of Fries; the lower cauline *leaves* are however not amplexicaul, and they are coarsely toothed from the base upwards. Fries says the *ligules* are ciliated, which we do not observe to be the case in our specimens. "Specifically distinct from all the forms of *H. cerinthoides*" — *Backhouse;* but the only constant character we perceive is in the scales of the involucre, which are all more obtuse than in *H. cerinthoides.* We are much disposed to consider the figure of *Dill. Elth.* f. 179, referred by Fries to his *H. Oreodes,* as taken from a cultivated specimen of this species.

5. H. *cerinthoides* L. (*Honey-wort H.*); glaucous, stem with few leaves and one or few heads hairy, leaves hairy, radical ones oblong or oblong-lanceolate toothed, cauline ones more or less amplexicaul or sessile ovate acuminate, the upper part of the peduncles and involucres stellate-downy with black-based hairs and setæ, involucre ventricose blackish, inner scales attenuated longer than the opening florets, ligules ciliated at the apex, styles livid. *E. B.* t. 2378. H. Lawsoni *Sm.* (not *Vill.*). H. anglicum *Fries.* H. pallidum *Br. Fl.* ed. 6. H. Halleri *Hook. in Fl. Lond.* t. 215. H. villosum *E. B.* t. 2739. (cult.).

Westmoreland, Teesdale. Cunnemara. Scottish mountains, principally of Breadalbane, Clova, and Aberdeenshire. ♃. 7, 8. — This has the stem usually simple and with one head, or simply forked, but

there are much more luxuriant forms with the branches again forked. *Leaves* sometimes minutely, sometimes very coarsely toothed, beneath sometimes furnished with stellate down, but often with scarcely any; cauline ones often small, but sometimes as large as the radical ones. *Scales* of the *involucre*, especially the inner ones, fine-pointed. Mr. Backhouse has, we learn, proved by cultivation that *H. anglicum* of Fries (which we had in view while describing *H. pallidum* in the last edition) does not differ from the present species.

6. H. **amplexicaúle* L. (*amplexicaul H.*); deep green, all covered with yellowish glandular hairs and viscid, stem woolly at the base 1—3-leaved branched, branches patent, leaves somewhat rigid, radical ones oblong ovate toothed stalked, cauline ones semi-amplexicaul, those of the branches and bracteas cordate-ovate amplexicaul, ligules ciliated at the apex. *E. B. S.* t. 2690.

"On a rock called the Garrie Barns, in Clova,"—*G. Don.* ♃. 7, 8. — The specimen in our herbarium labelled by Don himself, as found in the above rock, is obviously a cultivated one.

7. H. *alpínum* L. (*alpine H.*); green, stem with one or few heads and one or more leaves hairy, leaves hairy usually with glands, radical and lower cauline ones (if large) stalked upper or small ones sessile, heads in bud drooping, involucre campanulate much but loosely imbricated clothed with long grey or fulvous black-based silky hairs, its scales mostly spreading, outer ones subfoliaceous, innermost acuminate, ligules hairy beneath, styles yellow. *E. B.* t. 1110.

Elevated rocky mountains in Scotland and Wales. ♃. 7, 8.— *Stem* from 4 inches to more than a ft. high, simple in our wild specimens, sometimes naked, sometimes with a single leaf, and occasionally with several leaves. *Leaves* varying from elliptical and about 2 inches long, to oblong-lanceolate, and sometimes linear-spathulate, when including the petiole they are 6—8 inches long; usually nearly entire or slightly toothed. *Hairs* on the upper part of the *scape* black at the base and often mixed with black *setæ*. In the common form the involucre is thickly and the stem thinly clothed with the long silky hairs. Allied to this is a plant from Clova, marked by Mr. Backhouse, in our herbarium, as near *H. glanduliferum* Fr., which has shorter leaves than *H. alpinum*, the whole plant more glabrous, ligules almost glabrous on the back with scarcely any ciliæ, and styles yellow.

8. H. *melanocephalum* Backh. (*grey-headed H.*); green, stem with one or few heads and one or few leaves hairy, leaves hairy, radical ones lanceolate or oblong-lanceolate stalked usually deeply toothed at the base, upper ones small sessile, heads in bud drooping, involucre rounded or truncate at the base loosely imbricated, scales linear attenuated and as well as the peduncles clothed with grey black-based hairs and many black setæ, ligules hairy beneath, styles livid. H. alpinum, *var.* melanoce-

phalum *Fries.* H. Halleri *Hook.* H. nigrescens *Br. Fl.* ed. 6. (partly).

Elevated rocky mountains. 4. 7, 8. — *Stem* usually simple, but often becoming branched when cultivated. *Leaves* deeply toothed, sometimes almost laciniate. The *involucre* differs slightly in form from that of the last species, and its scales are narrower, more uniform in appearance, and usually clothed with more copious black setæ.

9. H. *nigrescens* Willd. (*black-headed H.*); green, stem with one or few heads usually with one leaf, leaves ovate or lanceolate sinuate-toothed at the base, heads in bud erect, peduncles and involucre stellate-downy black with setæ mixed with grey pointed hairs, scales broad outer ones bluntish, inner acuminate much longer than the opening florets, ligules ciliated, styles livid. H. pulmonarium *Sm.: E. B.* t. 2307.

Clova and Aberdeenshire mountains. 4. 7, 8. — Distinguished from the last by the broader leaves and copious grey starry pubescence on the peduncles.

10. H. *chrysánthum* Backh. (*golden-flowered H.*); green, stem scape-like with one or few heads, heads in bud "usually drooping," radical leaves long-stalked hairy, outer ones bluntish, inner lanceolate tapering at both ends irregularly toothed towards the base, petioles shaggy, cauline usually one small and narrow, summit of peduncle and urceolate involucre clothed with black setæ and whitish hairs mixed with starry down, scales uniform linear or attenuated longer than the opening bud, ligules slightly ciliated, "styles yellow" (*Backh.*). H. rupestre *Bab.* (not *Fries*). H. nigrescens *Br. Fl.* ed. 6. (partly). H. atratum *Bab.* (not *Fr.*).

Striden-edge, Helvellyn, Westmoreland. Clova and Braemar mountains. 4. 7, 8. — *Hairs* on the leaves and their stalks conspicuously denticulate, as in most other British species with shaggy petioles, but in no degree plumose. We are by no means satisfied that this is distinct from the last species, with which we formerly combined it; we see no difference of colour in the styles in our dried specimens. Mr. Backhouse remarks to us that "*H. nigrescens* has acuminate or obtuse broad phyllaries (involucral scales), and *H. chrysanthum* linear or attenuate and acute ones, with *very* irregularly toothed leaves and usually nodding flowers." We are indebted for the synonyms to this species to Mr. Backhouse, who adds that the true *H. atratum* of Fries does not appear to have been yet found in this country.

11. H. *pállidum* Biv. (*pale H.*); stem scape-like usually leafless, or with one rarely 2—4 lanceolate leaves slightly hairy corymbose at the top, radical leaves silvery-glaucous usually nearly glabrous above long-stalked, outer ones oblong obtuse, inner ovate-lanceolate entire above the middle, peduncles erecto-patent subrigid covered like the involucre with black setæ and

stellate down, involucre ventricose constricted above, scales close-pressed blackish when dry, outer ones acute or bluntish, inner acuminate longer than the opening florets, ligules glabrous, styles yellow. H. anglicum *Bab.* (partly)?

Falcon Clints, Teesdale. ♃. 7, 8. — Hairs on the petioles conspicuously toothed as in the last species. We have drawn up the above character from notes furnished by Mr. Backhouse of York and Mr. Baker of Thirsk, aided by a specimen from the above locality; we are assured by them that this is the plant intended by Fries. It is quite different from anything we have from Scotland.

12. H. *lingulátum* Backh. (*lingulate-leaved H.*); glaucous, stem branched leafy below, leaves lanceolate toothed at the middle sprinkled with harsh hairs on the margin and underneath, cauline ones sessile usually elongated and undulate decreasing upwards, involucre broad and the apex of the peduncles black with setæ mixed with hairs and stellate down, ligules slightly ciliated, styles livid. H. divaricatum *Don.* H. saxifragum *Bab.*

Clova mountains, particularly in the ravine of the White Water. ♃. 7, 8. — The leaves are usually almost glabrous above, but in Mr. Don's specimens are covered with harsh tawny hairs on both sides; we perceive no stellate down on them except occasionally on or near the midrib. The scales of the involucre are acuminate, but rather blunt at the point; Mr. Babington describes them as not exceeding the opening flowers (which is probable from the appearance of the dried specimens), but whether they be then bent in at the point as in *H. sylvaticum*, or straight, we are uncertain. Whether this be *H. saxifragum* var. *vimineum* Fr., or some other variety of that species, or altogether unnoticed by Fries, we have no means of deciding.

13. H. *argénteum* Fries (*Silvery H.*); intensely glaucous, stem hollow glabrous with one or few leaves several times forked or much branched, leaves lanceolate glabrous ciliated toothed at the middle, radical ones distinctly cauline shortly stalked, bracteas somewhat leafy, scales of the involucre broad obtuse, ligules glabrous, styles yellow. H. murorum ∂ glabrum *Hook.*? (fide Backh.)

Clova and Braemar mountains. ♃. 7, 8. — The above character is from Fries. If *H. glaucum* of Drummond (from the ravine of the White Water) be the same, the leaves are almost glabrous; but in our Clova specimen (received from Mr. Backhouse) they have very few hairs on the upper surface near the margin, and many on the under. The ligules appear to us free of ciliæ, but Mr. Backhouse (Phytol. iv. p. 806) says they are ciliated. In our specimen, moreover, the involucral scales are narrow and scarcely obtuse and the stem is several times forked. Mr. Baker of Thirsk informs us that this is found also on the English and Welsh mountains, but we have seen no specimens from these.

14. H. *murórum* L. (*Wall H.*); stem with about one leaf subcorymbose or forked, radical leaves numerous persistent

stalked usually rounded or cordate at the base and then with radiating or reflexed teeth somewhat hairy, cauline ones sessile or stalked, peduncles and the involucres with white stellate down and many black setæ with a few whitish black-based hairs, inner scales of the involucre cuspidate in bud straight and much longer than the florets, ligules glabrous at the apex, styles livid.

Woods, walls, and rocks, not uncommon. ♃. 6, 8. — Fries refers Smith's *var.* β. only to this species, while the *var.* α. and the figure in E. Bot. are considered to be *H. cæsium.* Fries also mentions his *H. plumbeum* as a British species, a plant having the leaves with stellate down beneath, and the involucre of *H. murorum*, the stem being forked as in *H. cæsium.* We fear, however, that the character derived from the stellate down depends on the aridity of the soil, and Fries himself allows that the inflorescence of the true *H. murorum* is sometimes forked. Fries states that alpine forms of this species have the ligules ciliated; such we have not observed in this country.

15. H. *Hypochæ'ridis* Gibs. (*Cat's-ear H.*); cæsio-glaucous, stem nearly glabrous leafless with narrow bracteas under each of the 2—3 peduncles, radical leaves usually spotted ovate or oblong stalked toothed near the base ciliated and sprinkled near the margin on both sides with rigid hairs, petioles shaggy, peduncles and truncate involucre with stellate down and black bristles, scales in bud very obtuse not exceeding the florets, ligules glabrous, styles yellow. H. cæsium *var.* Hypochæridis *Fries.*

Giggleswick Scars near Settle, Yorkshire. ♃. 8. — "A good species, distinguished from *H. cæsium* by its truncate involucre, very blunt phyllaries (scales) and yellow styles; nearer to *H. pallidum.*" —*Backhouse.* The scales of the involucre not straight, and exceeding the opening florets, but bent in over them seem to ally it with the two next, almost the only other British species which show this structure; at the same time we only presume this to be the case in the present species, from the observations of others, for such a character is not to be detected in dried specimens. We have specimens from Montgomeryshire from Mr. Leighton (under the name of *H. murorum*), and from Kings Park, Edinburgh, of what may prove to be the same, but the invol. scales are rather acute than blunt, and the leaves are not spotted.

16. H. *cæsium* Fries (*glaucous H.*); cæsio-glaucous, stem leafless or usually with one or few sessile leaves below once or twice forked or corymbose at the top with straight rigid erecto-patent peduncles, radical leaves numerous stalked ovate or lanceolate rounded or attenuated and deeply toothed at the base, peduncles and involucre with stellate down black-based hairs and black setæ, scales rather obtuse in bud not exceeding the florets, ligules glabrous, styles livid. H. murorum *E. B.* t. 1082. (fide Fries).

Perhaps not uncommon. 4. 6—8. — Young *heads* subglobose. If the involucral scales of the opening bud yield a character of no value, the rounded-leaved forms would be ranked with *H. murorum*, and those with leaves attenuated at the base with *H. sylvaticum;* admitting that character, this species is separated by them from *H. murorum*, and from *H. hypochæridis* by the livid styles; but from *H. sylvaticum* the distinguishing marks are not very perceptible, as far at least as regards the specimens with lanceolate root-leaves; perhaps the only one lies in the obtuse involucral scales. It is usually described with many black-based hairs and few black setæ on the peduncles and involucre; but we have specimens from Mr. Baker with rounded leaves in which this proportion is reversed, and agreeing in that respect with the usual forms of *H. sylvaticum.* The small cauline leaves when young have stellate hairs on the underside, but we see none on the radical ones.

17. H. *sylvaticum* Sm. *(wood H.)*; green, stem usually with several leaves branched upwards and paniculate-corymbose with straight ascending peduncles slightly hairy, leaves ovate-lanceolate toothed with the teeth pointing upwards somewhat hairy, radical ones stalked tapering into the petiole, cauline ones stalked or sessile, peduncles at the apex and the involucre with more or less stellate down mixed with setæ and few or no black-based hairs, scales equally attenuated in bud incumbent upon and not longer than the florets, ligules glabrous at the apex, styles livid. H. vulgatum *Fr.* — *α.* leaves uniformly green or purplish or glaucous underneath, radical ones persistent till the period of flowering. *E. B.* t. 2031. — *β.* leaves spotted with dark purple, radical ones withering before the expansion of the flowers. H. maculatum *Sm.: E. B.* t. 2121.

Mountain-woods, walls, and banks, frequent. — *β.* more rare. 4. 7, 8. — Cauline *leaves* usually numerous and coarsely toothed, never amplexicaul, but stalked or attenuated at the base. The radical ones are said to be nearly entire, and were this constant, it would enable us to distinguish this species from the form of *H. cæsium* with lanceolate root leaves which are coarsely toothed at the base; but we have specimens before us from Mr. Baker with the stem very leafy, and the lower leaves (they appear to be the radical ones) also laciniate-toothed at the base: the true root-leaves, however, frequently wither away at an early period, as in the next species.

18. H. *Gothicum* Fries *(naked-headed H.)*; obscurely green, stem usually rigid and almost glabrous leafy somewhat corymbose above, leaves ovate-lanceolate tapering gradually at both ends toothed principally about the middle, radical ones shortly stalked, cauline ones sessile passing gradually into bracteas, peduncles rigid erect or erecto-patent elongated and the broad base of the involucre sparingly sprinkled with black hairs and setæ and scarcely any stellate down, scales nearly glabrous at the margin and apex dark green blackish when dry broad mostly

obtuse in bud not longer than the florets, ligules glabrous at the apex, styles livid?

Teesdale. Clova. 4. 7, 8. — *Leaves* all similar in form; "radical ones dark green and rigid, very variable in number, sometimes forming a rosette, usually three or four but occasionally all faded at the flowering season. *Heads* of flowers on the average larger but less numerous than those of *H. sylvaticum.*"— *Baker.* We do not know what the specimens from Mr. Woods, quoted by Fries, are, but we understand that Mr. H. Watson's from Surrey, and referred to by Mr. Babington, belong to *H. tridentatum;* indeed, from the root leaves usually withering away at an early period, this species might almost be looked for in the next division of the genus. Mr. Baker states the style to be livid, Fries "fusco-hispidulus, siccitato-fuligineus," and Mr. Backhouse writes us that it is yellow; to us it certainly appears livid in the dried specimen.

19. H. *Dovrénse* Fr. (*Dofrine H.*); "pale green, stem simple leafy divided upwards into few short 1- (or rarely 2-) headed peduncles, leaves oblong or lanceolate toothed, radical ones smaller than the others stalked soon withering, cauline ones sessile, upper with a cordate base and semi-amplexicaul, involucres becoming black hairy, scales broad obtuse, ligules ciliated" *Fries.*

Scotland (Fries). 4. 7, 8. — We have seen no British specimens; from the radical leaves soon withering, it, as well as the last, might be supposed to belong to the next group (with which Mr. Babington has arranged both); it has an involucre similar to what we find in *H. boreale* and its allies, but the ligules appear to be constantly ciliated. *Leaves* passing gradually into bracteas. *Involucre* subglobose, pretty large, black with a few short simple hairs or rarely black setæ. *Achenes* as in *H. boreale*, dark-brown, slightly scabrous; *pappus* white. *Styles* fuliginose when dry.

3. *Plants producing (before winter) leaf-buds at the base, which next year become leafy stems without radical leaves. Achenes of moderate size, truncate at the top: hairs of pappus unequal.*

20. H. *prenanthoides* Vill. (*rough-bordered H.*); stem erect leafy simple hairy, panicle corymbose, leaves denticulate or entire ciliated reticulated and glaucous beneath, lower ones oblong tapering at the base into an auricled amplexicaul petiole, upper gradually smaller amplexicaul ovate-cordate acute or acuminate peduncles and involucres hispid with hairs and black setæ, outer scales few and much smaller than the inner obtuse ones, ligules ciliated at the apex, achenes pale or light brown very smooth. *E. B.* t. 2235. H. denticulatum *Sm.: E. B.* 2122.

River-sides in the Highlands of Scotland, but rare. 4. 7, 8. — *Heads* small, numerous; *involucres* cylindrical, the scales placed somewhat in two rows, the outer considerably shorter than the inner, without an intermediate one. *Leaves* gradually passing into bracteas as in all this group. "Hairs on the underside of the leaves not bulbous-based."—*Bab.*

21. H. *strictum* Fries (*straight-branched H.*); stem leafy rigid, leaves oblong-lanceolate narrowed at the base and subamplexicaul, peduncles clothed with stellate down and the blackish involucres sprinkled with setæ and hairs, scales rather irregularly imbricated inner ones obtuse, ligules ciliated, achenes blackish-brown slightly scabrous.

Scotland, in mountain-glens. Ochills and Braidalbane mountains. Forfarshire. 4. 7, 8. — "Hairs on the underside of the leaves bulbous-based."—*Bab.* Fries says that the branches are leafless, but in specimens from Dr. Dewar, similar to those examined by Fries, they are furnished with small leaves or bracteas. *Peduncles* frequently with a few short black hairs or setæ mixed with the down. *Involucres* with more copious black hairs and setæ than could be inferred from the character given by Fries: *scales* appressed, imbricated; the margins with white down, particularly in bud.

22. H. *tridentátum* Fries (*straight-scaled shrubby H.*); stem leafy rigid or flexuose slightly hairy panicled at the top, lower leaves ovate-lanceolate slightly stalked few-toothed about the middle, upper narrower and smaller passing gradually into bracteas, peduncles elongated erecto-patent and the involucres stellately downy with few black hairs and sometimes setæ, invol. in flower ovate at the base after flowering ventricose and constricted in the middle, scales dark green bluntish or acute paler at the margin outer ones lax inner narrowest, ligules glabrous at the apex, styles yellowish.

Woods and thickets, probably frequent. 4. 7, 8. — The above character is obtained from Mr. Baker's notes made on the plant as found in Teesdale: he adds that it is "intimately allied to *H. sylvaticum*:" sometimes there is a rosette of leaves at the base of the stem when the plant is in flower.

23. H. *rígidum* Hartm. (*rigid-stemmed H.*); green, stem rigid leafy panicled at the top, leaves lanceolate or linear-lanceolate all nearly similar in shape few-toothed about the middle lower ones stalked, upper nearly sessile, involucres after flowering narrowed upwards and not constricted in the middle with fugacious stellate down sprinkled with black hairs and setæ, scales lanceolate bluntish uniformly green blackish by drying, ligules glabrous at the apex, achenes blackish-brown slightly scabrous.

Mountainous districts. 4. 7, 8. — With this species we are scarcely acquainted, and have therefore taken our character almost entirely from Fries, who compares it with the last, from which it would appear to differ by the involucre. Mr. Baker informs us that when Teesdale specimens of *H. corymbosum* were sent to Fries, he labelled them "*H. rigidum.*"

24. H. *corymbósum* Fries (*corymbose H.*); "stem rigid nearly glabrous densely leafy paniculato-corymbose at the top, leaves

ovate-lanceolate narrowed gradually below toothed about the middle glaucous and prominently veined beneath, upper ones somewhat amplexicaul, peduncles with leaves or bracteas erecto-patent usually rigid and the broadly-ovate-based involucres sprinkled with white stellate down and black hairs and setæ, scales dark green blackish when dry paler at the margin, outer ones shorter lax acute, inner attenuated upwards bluntish, ligules glabrous, styles yellowish." H. boreale *Br. Fl.* ed. 6. (in part.)

Mountain-glens in Teesdale, Wales and Scotland. ♃. 7, 8.—"*Stem* 2—6 feet high. Intimately allied to *H. crocatum*, but distinguished by its leaves, panicles, and involucres; *heads* of flowers more numerous but smaller."—*Baker in litt.*

25. H. *crocátum* Fries (*saffron-coloured H.*); "stem rigid or flexuose glabrous or hairy densely leafy paniculato-corymbose at the top, leaves narrowed gradually to a broad base paler and prominently veined beneath, upper ones amplexicaul, peduncles erecto-patent and the broad based involucres slightly stellately-downy, scales dark green blackish when dried slightly hairy or setose on the back closely appressed all blunt. ligules glabrous at the apex, styles crocate." H. boreale *Br. Fl.* ed. 6. (partly).

Scotch mountains. Teesdale, Craven, and Cleveland. ♃. 7, 8. "*Stem* 1—3 feet high, glabrous or hairy. *Leaves* numerous, varying in shape from ovate to linear-lanceolate, rigid or flaccid, glabrous or hairy. *Heads* of flowers large, but not so numerous as in *H. umbellatum*. Allied to *H. umbellatum* and *H. corymbosum*, rather than to *H. boreale*."—*Baker in litt.* As we ourselves cannot distinguish this and the last species in the dried state from each other, nor at all times from *H. boreale*, we have given the characters drawn up by Mr. Baker from living specimens.

26. H. *umbellátum* L. (*narrow-leaved H.*); stem erect simple corymbose or subumbellate at the apex rigid very leafy, leaves oblong-lanceolate or linear toothed or entire, lower ones attenuated at the base, upper sessile acute or rounded at the base, peduncles and sometimes the involucres with stellate down not hairy, scales obtuse with recurved points.—*α.* leaves all attenuated at the base. *E. B.* t. 1771.—*β.* leaves broader and ovate at the base, whole plant larger.

Woods, or stony, or rocky places. Rare in Scotland.—*β.* Near Dunkerran, co. Kerry, Ireland. ♃. 8, 9.—The most decidedly marked species of the genus. *Involucres* usually dark green and glabrous, but sometimes pale, always with recurved points to the scales. *Achenes* slightly scabrous, dark brown, and usually shorter than those of *H. boreale*. *Styles* said by Fries to be permanently yellow, and they never seem to become of the dark livid colour observable in some others.

27. H. *boreále* Fries (*shrubby broad-leaved H.*); stem leafy rough or hairy subcorymbose at the top, leaves ovate-lanceolate or lanceolate toothed, lower ones narrowed into a petiole, upper sessile with a broad rounded or cordate base, peduncles with copious white stellate down scaly, involucres ovate at the base uniformly blackish-green when dry, scales appressed sometimes hispid on the keel and sprinkled with longish white hairs otherwise glabrous and free of black setæ, innermost ones very blunt outer often narrower, ligules glabrous at the apex, achenes (blackish-brown or red) slightly scabrous. H. Sabandum *E. B.* t. 349.

Woods and hedges, not uncommon. ♃. 7—9. — We fear that this is a much more variable plant than is generally supposed: that which is usually so called is as above characterised, and is best known by the dark green blunt scaled involucres without down contrasting with the white downy peduncles.[1]

*** *Pappus neither filiform nor plumose.* (Gen. 14, 15.)

14. LÁPSANA *Linn.* Nipple-wort.

Achenes compressed, striate. *Pappus* none, or a mere border. *Receptacle* naked. *Involucre* in a single row of erect scales, with small ones at the base. — Named from λαπάζω, to *purge*, from its laxative qualities.

1. L. *communis* L. (*common N.*); involucre of the fruit angular, stem panicled, peduncles slender, leaves ovate or cordate petiolate angulate-dentate, pappus none. *E. B.* t. 844.

Waste and cultivated ground, common. ☉. 7—9. — *Stems* 2—4 ft. high. *Leaves* soft and thin, slightly hairy; the *radical* ones more or less lyrate. *Flowers* small, yellow.

2. L. *pusilla* Willd. (*dwarf N.*); scape branched very thick and fistulose upwards, leaves obovate-oblong toothed, pappus a short entire border. Hyoseris *L.*: *E. B.* t. 95. Arnoseris *Gærtn.*

Corn-fields, in gravelly soils. ☉. 6, 7. — *Scapes* 6—8 inches high, more or less branched, remarkable for their clavate and fistulose extremities. *Flowers* small, yellow.

[1] In the above account of the genus *Hieracium*, we have endeavoured, aided by notes and specimens from Messrs. Baker and Backhouse, to give short descriptions (rather than specific characters) of almost all the *forms* enumerated as British, and have even admitted a few of which we have no specimens. Fries mentions several more, and we have seen many specimens of an intermediate kind that can be referred to some one or other only with doubt, indicating that names require to be made. At present, however, we are quite ignorant how these forms are to be combined so as to constitute species with some *positive* or *absolute* and well-defined character, by which they can be readily recognised in the field or in the garden, also or in the herbarium, stunted or drawn out, with certainty and precision. In a difficult genus, negative or comparative characters are of no use except to those who already know most of the species. Mr. Backhouse, of York, is, we understand, engaged in studying this genus, and will, we trust, ere long make public the result of his labours.

15. Cichórium *Linn.* Succory.

Achenes turbinate, striate. *Pappus* sessile, scaly, shorter than the fruit. *Receptacle* naked or slightly hairy. *Involucre* of 8 scales, surrounded by 5 smaller ones at the base. (Flowers *blue.*)—Name: *chikoùryeh*, in Arabic. The Egyptians eat a vast quantity of this vegetable.

1. C. *Intybus* L. *(wild S.)*; heads sessile axillary in pairs, lower leaves runcinate hispid on the keel, upper ones amplexicaul oblong or lanceolate entire. *E. B.* t. 539.

Borders of fields and waste places; chiefly in a light, gravelly or chalky soil. ♃. 7—10. — *Stem* 1—3 ft. high, erect, branched. *Flowers* numerous, large, of a bright but pale blue. — The *Endive* or *Succory* of the gardens is *C. Endivia*, supposed to be a native of India. The specific name of both is derived from the Arabic *Hendibeh.*

Tribe II. Cynarocephalæ. Artichoke or Thistle Tribe.

All the corollas tubular (Tab. IV. A.), 5-cleft, and generally inflated below the mouth, uniform in the same head (perfect or rarely dicœcious), or, as in *Centaurea*, with those of the circumference irregular, tubular, and neuter (Tab. IV. B.). Style swollen below its branches. (Gen. 15—23.[1])

[1] This, like the preceding, is a very natural tribe, deriving its name from *Cynara*, the *Artichoke*, which, as well as the Thistles, will give a good idea of the general aspect or appearance of all in the group; and it is desirable to study the aspect, for in the following tribe (*Corymbiferæ*) there are some genera which have wholly tubular florets, but they are usually quite distinct in appearance from the present, and, upon looking a little carefully into their structure, we shall find that they may be further distinguished from the Thistle tribe by the corollas not inflated below their mouth, and by the style not being swollen below its branches. Examples of the present group will be seen at

Tab. IV. A. Fig 1. Head of flower, of *Carduus*, with the spreading uniform tubular florets within the involucre.

Fig. 2. represents the involucre cut through vertically, to show the receptacle, upon which are a great number of bristles, all the florets being removed from the receptacle but one.

Fig. 3. A floret from the receptacle, showing at the base the ovary or germen, crowned by the pappus or limb of the calyx, within which is the tubular corolla, inflated below the mouth, and including the stamens and swollen style, with its branches and stigmas.

Fig. 4. Summit of the style, showing the swelling (in this instance clothed by a circle of hairs).

All but fig. 1. more or less *magnified.*

Tab. IV. B. Fig. 1. Head of flowers of the genus *Centaurea*, with the spreading tubular florets, of two kinds, within the involucre.

Fig. 2. Floret from the centre. At its base is the germen or ovary and pappus; within the latter is the corolla, tubular, regular, perfect (having stamens and pistils), inflated below the mouth, and including the stamens and style, the latter swollen just below its branches.

Fig. 3. Floret from the circumference, neuter (having neither stamens nor pistils). At its base is an abortive germen (no pappus), upon which is seated the tubular 5-cleft, but somewhat irregular corolla.

Fig. 4. Fruit of No. 2. with its pappus.

All but fig. 1. more or less *magnified.*

16. A'RCTIUM *Linn.* Burdock.

Achenes 4-sided. *Pappus* short, pilose. *Receptacle* chaffy. *Involucre* globose, the scales with an incurved hook at the point. —Name: ἄρκτος, a *bear*, from the coarse texture of the involucres.

1. A. *Láppa* L. (*common B.*); leaves cordate stalked.—*α. majus*, heads large, usually corymbose, inner scales of the involucre subulate gradually attenuated into a mucronate point longer than the florets. A. majus *Schk.*—*β. intermedium*, heads large ovate racemose webbed, inner involucral scales subulate mucronate as long as the florets. A. Bardana *E. B.* t. 2478. A. intermedium *Lange.* A. minus *β. Bab.*—*γ. minus*, heads smaller globular racemose more or less webbed, inner involucral scales subulate mucronate shorter than the florets. A. minus *Schk.* A. Lappa *E. B.* t. 1228.

Waste places and way-sides, common. ♂. 7, 8. — Three feet or more high. Radical *leaves* very large and often slightly toothed. *Involucre* with hooked scales, which fasten themselves most pertinaciously to clothes and the coats of animals. These *scales* are sometimes glabrous, and occasionally have a more or less abundant cottony substance interwoven with them in some of our varieties; whence three species have been established by some authors, but with very unsatisfactory characters.

17. SERRATULA *Linn.* Saw-wort.

Achenes obovate, compressed, glabrous. *Pappus* persistent, pilose, hairs filiform in several rows, of which the interior is the longest. *Receptacle* chaffy, the scales split into linear bristles. *Involucre* oblong, imbricated with straight unarmed scales. *Filaments* papillose: *anthers* with a short blunt appendage, ecaudate at the base.—Name: *serrula*, a little *saw*, which the margins of the leaves represent.

1. S. *tinctória* L. (*common S.*); diœcious, leaves entire or pinnatifid, involucral scales glabrous, or slightly connected with a cobweb-like down, outer ones ovate appressed, inner linear coloured. *E. B.* t. 38.

Thickets and pastures. Not indigenous in Scotland. 4. 8. — *Stem* 2—3 ft. high, branched, stiff. *Leaves* usually pinnatifid or lyrate, and finely serrated, sometimes entire and without serratures, as in Appley Wood, I. of Wight, *Miss Taten.* *Flowers* purple. — It dyes cloth yellow.

18. SAUSSÚREA *De Cand.* Saussurea.

Achenes glabrous. *Pappus* double, sessile; exterior of short rough bristles; inner feathery, deciduous. *Receptacle* bristly or chaffy. *Involucre* imbricated with unarmed scales. *Fila-*

ments smooth: *anthers* with long acute appendages at the apex, and ciliated or woolly setæ at the base.—Named in honour of the two *Saussures*, father and son.

1. S. *alpína* DC. (*alpine S.*); leaves flat cottony beneath lanceolate upper ones quite entire, those of the root ovate-lanceolate toothed stalked, heads few densely corymbose, involucre villous subcylindrical, scales appressed, the outer ones shorter, anther-bristles ciliated. *E. B.* t. 599.

Moist alpine rocks. Snowdon; Saddleback. Dumfriesshire; frequent on the Highland mountains of Scotland. 4. 8.— *Stem* 8—12 inches high, erect, simple, woolly. *Leaves* few upon the stem. *Flowers* rather large, purple.

19. Cárduus *Linn.* Thistle. (Tab. IV. A.)

Achenes glabrous. *Pappus* equal pilose (not feathery), sessile, united by a ring at the base and deciduous. *Receptacle* bristly. *Involucre* imbricated with spinous pointed scales. *Anthers* ecaudate.—Name: from the Celtic and Gaelic *card*, a *card* for combing wool, for which the involucre of some of the species may have been employed, and this again from *ard*, in Celtic, a *point*; whence also ἄρδος, in Greek, *arduus*, *ardeo*, &c. in Latin.

* *Filaments distinct, hairy; anther-appendages subulate.* Eucarduus.

1. C. *nútans* L. (*Musk T.*); leaves decurrent sinuate spinous, heads hemispherical solitary drooping, scales of the involucre lanceolate, outer ones spreading. *E. B.* t. 1112.

Waste ground in dry, stony, or chalky soils. ♂. 5—10.— *Stem* 2—3 ft. high, not much branched, cottony, interruptedly winged. *Leaves* lanceolate or oblong, deeply sinuated. *Heads* of *flowers* large, handsome, purple. *Involucre* slightly woolly or almost glabrous.

2. C. *acanthoídes* L. (*welted T.*); leaves decurrent lanceolate sinuate pinnatifid spinous, heads globose nearly sessile solitary or aggregated, involucral scales linear-subulate erect or spreading. *E. B.* t. 973.—*α.* heads larger usually solitary, disk of achene with a 5-lobed tubercle.—*β.* heads aggregated, disk of achene with a conical tubercle. C. crispus *L.*

Way-sides and waste places. ⊙. 6—8. — *Stem* 3—4 ft. high, interruptedly winged, branched. *Leaves* glabrous or cottony beneath. *Flowers* deep purple, sometimes white.

3. C. *tenuiflórus* Curt. (*slender-flowered T.*); leaves decurrent lanceolate sinuate spinous somewhat cottony beneath, heads nearly cylindrical aggregated sessile, involucral scales ovate-lanceolate attenuate erect. *E. B.* t. 412.

Waste sandy places, especially about towns, near the sea. ⊙ or ♂. 6—8. — *Stem* 2—4 ft. high, winged to the top with the decurrent bases of the leaves.

** *Filaments monadelphous, papillose : anther-appendages short.*
Silybum.

4. C. *Mariánus* L. (*Milk T.*); leaves sessile amplexicaul waved spinous the radical ones pinnatifid, scales of the involucre subfoliaceous recurved spinous at the margin. *E. B.* t. 976. Silybum *Gært.*

Banks and waste places. Rare in Scotland; about Edinburgh; on Dumbarton rock. ♂. 7. — *Stem* 3—5 feet high. Distinguishable at once by the white veins on its *leaves*, and the great recurved *scales* of the *involucre*. A drop of the Virgin Mary's milk was considered to have produced these veins, as that of Juno was fabled to be the origin of the *milky way*.

20. Cnícus *Linn.: Willd.* Plume-thistle.

Achenes glabrous. *Pappus* equal, plumose, sessile, united by a ring at the base and deciduous. *Receptacle* bristly. *Involucre* tumid, imbricated usually with spinous or mucronate scales. *Anthers* ecaudate; *filaments* distinct.—Named from κνιζω, to *prick* or *wound*.

1. C. *lanceolátus* Willd. (*Spear P.*); leaves decurrent hispid pinnatifid their segments generally two-lobed spreading spinous, involucres ovate tomentose their scales lanceolate spreading. Carduus *L.: E. B.* t. 107.

Way-sides and pastures, frequent. ♂. 7, 8.— *Stem* 3—4 ft. high. *Leaves* white and downy beneath, spinous-hairy above; their points long and very sharp. Heads of *flowers* standing singly, large.

2. C. *palústris* Willd. (*Marsh P.*); leaves decurrent scabrous pinnatifid spinous, involucres ovate clustered, their scales ovate-lanceolate mucronate appressed. Carduus *L.: E. B.* t. 974.

Moist meadows and shady places, frequent. ♂. 7.— *Stem* 4—6 ft. high, erect, copiously clothed with rather short spines. Remarkable for its clustered heads of *flowers*, whose *involucres* have the *scales* broad, appressed, keeled and mucronate.

3. C. *arvénsis* Hoffm. (*creeping P.*); leaves spinous, heads dioecious by abortion, involucre ovate nearly glabrous, its scales broadly lanceolate appressed terminating in a short spreading spine, root creeping.—*α.* leaves sessile or very slightly decurrent pinnatifid very wavy. Carduus *Curt.: E. B.* t. 975.—*β.* leaves oblong broad sinuately lobed slightly wavy decurrent with an interrupted spinous wavy wing, uppermost nearly sessile.—*γ.* leaves lanceolate flat entire or slightly lobed. Cirsium setosum *M. Bieb.?*

Fields and road-sides, too abundant. —*β.* Croxall, Derbyshire. —*γ.* Culross, by the Frith of Forth, Perthshire. Hartlepool. 4. 7. — We have seen no specimens of our *β.*, noticed by Babington. As

to our γ. it has been only found in Perthshire by Dr. Dewar, and near Hartlepool by Mr. Backhouse. It may not be the plant of Bieberstein, an Eastern species, described with scarcely rigid points to the involucral scales; otherwise we must suppose it to have been introduced with ballast.

4. C. *eriόphorus* Willd. (*wooly-headed P.*); leaves semi-amplexicaul not decurrent white and cottony beneath spinous-hairy above pinnatifid, lobes bifid alternate segments pointing upwards and downwards, involucres spherical woolly, the scales with a long reflexed spinous point. *E. B.* t. 386.

Waste ground and road-sides, in chalky and limestone soil. Rare in Scotland; near Edinburgh, Dumbarton and in Appin. ♂. 7, 8. — *Stems* much branched, furrowed, 2 ft. high; the stoutest of the genus. *Leaves* acuminate, white and downy beneath; their lobes alternately pointing upwards and downwards, and terminated by sharp spines. *Involucre* very large; its scales linear, mucronate, much interwoven with a woolly substance.

5. C. *heterophýllus* Willd. (*melancholy P.*); leaves semi-amplexicaul (not decurrent) lanceolate soft ciliato-dentate undivided or laciniate glabrous above white and downy beneath, heads mostly solitary, involucres ovate slightly downy, scales ovate or lanceolate acuminate appressed. *E. B.* t. 675.

Moist mountain-pastures in the North, frequent. ♃. 7, 8. — *Root* creeping. *Stems* 2—3 ft. high, striate, and, as well as the under-side of the leaves, covered with a white cottony down. *Involucre* dark green; its scales acuminate but not spinous.

6. C. *tuberósus* Willd. (*tuberous P.*); leaves sessile (not decurrent) lanceolate deeply pinnatifid lobed fringed with minute prickles pilose above hairy or slightly cottony beneath, lower ones on long stalks, stem without wing or prickles with 1—3 terminal heads, scales of the involucre lanceolate mucronate appressed nearly glabrous, root of elliptical tapering fleshy knobs. *E. B.* t. 2562.

In a copse wood, called Great Bridge, on the Wiltshire downs. Between S. Donat's and Dunraven, Glamorganshire; *Mr. Westcombe*, Penhill, parish of Stratton St. Margaret's, 2 m. from Swindon; *Mr. Woodward*. ♃. 8, 9. — The Glamorganshire plant is said (Phyt. iv. 519) to be probably *C. Woodwardii* of Hewitt Watson, a species founded on the Penhill specimens; but we have seen no description, and do not possess specimens from any of the localities.

7. C. *praténsis* Willd. (*Meadow P.*); creeping, leaves soft mostly radical cauline ones sessile lanceolate waved at the edge or pilose above cottony beneath fringed with minute prickles, heads mostly solitary globose terminal slightly cobwebbed, scales lanceolate closely imbricated mucronate. Carduus *Huds.*: *E. B.* t. 177. Cirsium Anglicum *Lam.*

Low wet pastures. Rare in Scotland; Isla and Arran. ♃. 6—8. — About 1—2 ft. high. It is not always easy to distinguish this from the last species: the leaves in *C. tuberosus* are however usually deeply pinnatifid, here they are only sinuate or with small 2—3-cleft lobes. The true *C. Forsteri* Sm. is now allowed to be a hybrid between this species and *C. palustris*, having "leaves slightly decurrent pinnatifid spinous downy beneath, stem panicled hollow, involucre ovate rather cottony, outer scales spinous," and the stems 3—4 ft. high, several from the crown of the root, which is cæspitose and not stoloniferous. Only single specimens have been here and there observed, particularly in Sussex. Perhaps other hybrids occur, inclining sometimes more to the one parent, sometimes more to the other; but what are usually so called in herbaria are, according to Mr. H. Watson, luxuriant specimens of *C. pratensis* itself.

8. C. *acaúlis* Willd. (*dwarf P.*); stem almost none or short, leaves nearly all radical glabrous lanceolate-oblong pinnatifid, lobes somewhat trifid spinous-toothed, heads mostly solitary, involucre obovate-cylindrical glabrous, scales appressed acute scarcely mucronate, outer ones ovate inner gradually longer. Carduus *L.*: *E. B.* t. 161.—*β*? stem much branched, with several heads. C. dubius *Willd.* ?

Frequent and destructive in dry gravelly or chalky pastures, in some parts of England, as Dorsetshire and Norfolk.—*β.* Saffron Walden, Essex; *Mr. G. S. Gibson.* ♃. 7—9. — With *β.* we are not acquainted; only one plant was found: in cultivation the stemless plant occasionally exhibits a slightly branched stem, but Mr. Borrer supposes the *β.* to be a hybrid between *C. acaulis* and *C. arvensis.* In the usual form the *leaves* spread close to the ground, from their centre arises one sessile head of purple flowers.

[*C. oleraceus* is said to have been gathered "wild in Lincolnshire by the late Mr. Cole of Bourne, about 1823," but seems to have disappeared: it is no way allied to any of our British species, and can have no claim to be indigenous.]

21. Onopórdum *Linn.* Cotton-thistle.

Achenes 4-ribbed, glabrous. *Pappus* pilose, rough, sessile, united into a ring at the base and deciduous. *Receptacle* honey-combed. *Involucre* tumid, imbricated, the scales spreading and spinose. *Anthers* with subulate appendages at the apex, shortly caudate at the base.—Name: *ονος*, an *ass*, and *πεδω*, *pedere*; from the effect, according to Pliny, upon the ass which eats it.

1. O. *Acánthium* L. (*common C.*); scales of the involucre spreading subulate, leaves ovate-oblong sinuate and spinous decurrent woolly on both sides. *E. B.* t. 977. *Cat. p.* 9.

Waste-ground, road-sides, &c., in a gravelly soil. Less frequent in Scotland. ♂. 8. — *Stem* 4—6 feet high, branched and winged at the summit; wings very spinous. *Involucre* globose. *Flowers* purple.

The seeds of this and of others of the Thistle tribe are much eaten by birds. It is *cultivated* in Scotland as the *Scotch Thistle.*

22. Carlína *Linn.* Carline-thistle.

Achenes oblong, cylindrical, silky. *Pappus* feathery, sessile, hairs unequally united at the base. *Receptacle* chaffy, scales irregularly cleft. *Involucre* imbricated, tumid; the outer scales lax with numerous spines; the inner coloured, spreading resembling a ray. *Anthers* with ciliated bristles at the base, and long appendages at the apex. — Name: the same as *Carolina*, from a tradition that the root was shown by an angel to *Charlemagne*, as a remedy for the plague which prevailed in his army.

1. C. *vulgáris* L. (*common C.*); stem many-flowered corymbose pubescent, leaves lanceolate unequally spinous and sinuate downy beneath. *E. B.* t. 1144.

Dry hilly pastures, and fields. Rare in the west of Scotland; Galloway; Benmanhead, Isle of Arran. ♂. 6—10. — One foot high, very spinous, but the spines generally short. *Ext. scales* or *leaflets* of the *involucre* much resembling the *leaves*, but smaller; *inner* ones linear, membranous, yellow, entire, spreading and forming a horizontal ray around the purplish *florets*. *Anthers* with two bristles at the base.

[Of *C. racemosa* a single specimen was found in the Isle of Arran, Galway Bay, Ireland, by Mr. Andrews; but truly indigenous species do not occur in an isolated manner, unless where expelled by cultivation.]

23. Centaúrea *Linn.* Knapweed, Blue-bottle, and Star-thistle. (Tab. IV. B.)

Achenes compressed. *Pappus* pilose or scaly or none, rarely exceeding the achene in length. *Receptacle* bristly. *Involucre* imbricated. *Florets* of the disk perfect; of the circumference narrow, funnel-shaped, irregular, without stamens or pistil (neuter), longer than those of the disk, and resembling a ray (sometimes wanting). — So named, because with a plant of this genus it is said the *Centaur Chiron* cured himself of a wound received in the foot from Hercules.

* *Involucral scales linear, with a broad scarious appendage at the apex.*

1. C. * *Jácea* L. (*brown-rayed K.*); involucral appendages scariose torn the outer pinnatifid, leaves linear-lanceolate the lower ones broader and toothed, heads rayed, pappus none. *E. B.* t. 1678.

Hedges and waste places. Sussex. Belmont castle and Invercarrity, Angusshire; Craignethan Castle, Lanarkshire; Belfast, Ireland. ♃. 8, 9. — *Lower leaves* obovato-lanceolate, petioled, toothed; upper ones entire, sessile. The *appendages* of the *scales*

of the *involucre* are pale brown, shining, the outer ones deeply pinnatifid, the middle ones torn, the uppermost sometimes nearly entire, and having the scale itself so elongated as not to be covered by the lower ones. In these respects the usual form differs strikingly from *C. nigra;* but there are occasionally specimens approaching it, and what is called *C. transalpina* is quite intermediate. Smith says that the achenes are "crowned with a simple row of very short black bristles;" in our foreign specimens there is no vestige of a pappus. Only one specimen has been found in Sussex and another in Lanarkshire: the Angusshire plant is more probably the rayed state of *C. nigra;* the Irish one, if wild, is probably in the same predicament.

2. C. *nigréscens* Koch (*black-rayed K.*); "involucral appendages erect ovate pectinated about 3 innermost rows separated from the rest and exposing the scales, teeth ascending capillary at least as long as the breadth of the appendage, pappus almost wanting, leaves linear-lanceolate, lower ones ovate sinuate-dentate or lyrate-sinuate."—*Bab.*

Meadows and pastures in the west of England. ♃. 6—9.—Involucral appendages dark, of the outermost small, of succeeding rows broader and broader. Heads usually rayed.—We do not know with certainty what plant is meant; but the character agrees well with *C. transalpina* Schl., except that in our specimen we can detect no pappus whatever. The elongation of the inner scales of the involucre is not, we fear, a constant character.

3. C. *nígra* L. (*black discoid K.*); involucral appendages ovate quite covering the involucre closely and deeply fringed, teeth spreading capillary twice as long as the breadth of the appendage, lower leaves angulato-dentate sublyrate, upper ones lanceolate, pappus of short linear unequal scales.—*α.* heads discoid. *E. B.* t. 278.—*β.* heads rayed. C. nigrescens *Willd.*

Meadows and pastures, frequent.—*β.* not uncommon in the S. and W. of England and Wales; rare in Scotland. ♃. 6—9.—*Stem* 2—3 ft. high. *Leaves* scabrous. *Scales* of the involucre with black appendages and brown teeth; one or more of the innermost rows in our var. *β.* is often so long as not to be covered by the outer scales, a structure we have never seen in var. *α. Pappus* never wanting, consisting of an outer row of very short blunt scales, and in var. *α.* of numerous longer ones which are often deciduous; these longer ones in our var. *β.* seem either to be few in number, or entirely wanting (very caducous?). We have no objection to unite the rayed form to the last, as we are not aware that cultivation has ever caused it to lose its ray, or the common state of *C. nigra* to obtain one.

** *Involucral scales lanceolate, their upper half with a scarious margin.*

4. C. *Scabiósa* L. (*greater K.*); scales of the involucre appressed with a black pectinate margin, leaves roughish pinnatifid, segments lanceolate acute, pappus pilose about the length of the achene. *E. B.* t. 56.

Barren pastures, corn-fields, and road-sides. Rare in Scotland. 4. 7—9. — *Stem* 2—3 ft. high, erect, much branched. *Involucres* globose, very large, their *scales* usually cottony, with an almost black scarious margin, and paler fringe. Within the outer hairs of the pappus there is an inner row of shorter hairs.

5. C. *Cýanus* L. (*Corn B.*); scales of the involucre appressed with a brown toothed margin, leaves linear-lanceolate entire, the lowermost toothed or pinnatifid, pappus pilose rather shorter than the achene. *E. B.* t. 277.

Corn-fields, frequent. ⊙. 6—8. — *Stem* 2—3 feet high, covered with a loose cottony down, especially on the stems and under-side of the *leaves*. *Florets* of the *disk* small, purple; of the *ray* few, larger, bright blue, spreading. *Scales* of the *involucre* greenish, their margins brown. *Outer* row of the hairs of the *pappus* tawny, innermost white.

*** *Involucral scales with palmate or pinnated spines.*

6. C. *Isnárdi* L. (*Jersey S.*); scales of the involucre with palmate nearly equal spines, leaves scabrous, lower ones somewhat lyrate or incise-toothed amplexicaul, upper linear coarsely toothed tapering at the base, heads terminal solitary with one or more leaves at the base. *E. B.* t. 2256. C. aspera *L.*

Pastures in Jersey and Guernsey. 4. 7, 8. — *Flowers* purple. *Spines* of the *involucre* small, nearly equal in size. *Pappus* present in all the florets.

7. C. *Calcítrapa* L. (*common S.*); scales of the involucre glabrous ending in a long broad strong canaliculate spine spinulose at its base, stem divaricated, leaves unequally pinnatifid spinuloso-dentate, heads lateral solitary sessile, pappus none. *E. B.* t. 125.

Gravelly, sandy, and waste places, in the middle and S. of England, especially near the sea. ⊙. 7—10. — *Flowers* purple. — The specific name is derived from an old Celtic, and now English word *trap*, a *snare*, and *calg*, a *prickle*; whence the Saxon and English word *Caltrop* (an instrument of war with long points), and the French *chausse-trappe*, which last seems to have been Latinised into *calcitrapa*.

8. C. * *solstitiális* L. (*yellow S.*); scales of the involucre woolly palmato-spinose ending in a long slender spine, stem winged from the decurrent bases of the lanceolate unarmed entire leaves, radical ones lyrato-pinnatifid, heads terminal solitary. *E. B.* t. 243.

Occasionally seen in fields and waste places, principally in the E. and S. of England, and near Dublin. ⊙. 7—9. — *Flowers* yellow, as are the slender needle-like spines of the *involucre*. *Pappus* rigid.

Tribe III. Corymbiferæ.

Heads either *discoid;* with the florets of each uniform and usually tubular (Tab. IV. C.), or those of the circumference filiform or tubular-and pistillate only:—or *rayed* (Tab. IV. D.) when furnished with a ray consisting of ligulate pistillate or neuter spreading florets. Style of the perfect florets not swollen beneath its branches.[1] (Gen. 24—46.)

Subtribe I. Tubifloræ. *Heads discoid.*[2] (Tab. IV. C.) (Gen. 24—33.)

* *Pappus of awns or wanting.* (Gen. 24—27.)

24. Bídens *Linn.* Bur-marigold.

Páppus of 2—5 persistent awns, which are rough with minute deflexed prickles. *Receptacle* chaffy. *Involucre* of many scales;

[1] This tribe is an extensive one, and at first sight will appear less natural and less recognizable by the inexperienced eye, than the two former tribes. The greater number of the genera and species which compose it, have radiate flowers, and then they are readily distinguished. Of this we have very familiar examples in the *Daisy* (Tab. IV. D.), the *Ox-eye* and the *Leopard's-bane;* but in many cases the ray is so small as to be hardly perceptible, as in the *Cud-weeds;* or it is wholly wanting, as in the *Hemp-agrimony*, *Bur marigold*, and in the *Diotis* or *Cotton-weed* (Tab. IV. D.). In these latter then the florets are all tubular; but the student will observe that the florets do not spread, as in most of the *Thistle tribe*, that the corolla is not remarkably inflated below the mouth, nor is the style swollen below the branches; and he would never think of arranging any one of them with the Thistles. A reference to our figures and a comparison of them with the figures of the two preceding tribes, will show at once the essential distinctions.

Tab. IV. C. Fig. 1. Head of flowers of *Diotis:* the florets all tubular, erect, crowded, parallel (not spreading), surrounded by the scaly and woolly involucre.

Fig. 2. Single floret taken from the receptacle, with its chaffy scale. Within the fringed scale is seen, at the base of the floret, the germen (destitute of pappus), upon which is the tubular corolla, with its two curious ears at the base, and including the stamens and pistil.

Fig. 3. Upper part of the style, showing no swelling.

Figs. 4. 5. Fruits, with the withered and persistent base of the corollas.

All more or less *magnified.*

Tab. IV. D. Fig. 1. Head of flowers of the *Common Daisy* (*Bellis perennis*), showing the tubular florets in the centre, and the ligulate ones forming a ray in the circumference, all within the involucre.

Fig. 2. Involucre, with the conical receptacle; all the florets being removed.

Fig. 3. Floret of the ray or circumference, having at its base the germen destitute of pappus, and above it the ligulate or strap-shaped corolla, exhibiting in its short cylindrical base only a style and no stamens: it is, therefore, imperfect, but fertile, the pistil being fertilized by the anthers of the central florets.

Fig. 4. Floret of the centre or disk, having, at the base, the germen, destitute of pappus: above that, the tubular corolla, including the stamens and style: it is, therefore, perfect.

All more or less *magnified.*

The name *Corymbiferæ* was given to this tribe or division of *Compositæ*, because, in many cases, as in the *Hemp-Agrimony*, *Tansy*, &c., the heads of flowers are arranged in corymbs; but this is by no means universally the case.

[2] In *Bidens* there is occasionally a true ray. In *Tanacetum* somewhat tubular florets with a short ligule, and in *Artemisia*, *Gnaphalium*, and *Petasites*, slender ones with a filiform inconspicuous erect ligule are sometimes observed in the circumference, but in these cases the heads can scarcely be said to be rayed. On the other hand some species of *Senecio*, in the second subtribe, are without a ray, and some species of *Erigeron* and *Inula* have it erect and so inconspicuous that they might almost be looked for in the present subtribe.

the outer ones or bracteas often leafy. (Heads *sometimes with a neuter ray.*)—Name: *bis*, *double*, and *dens*, a *tooth*; from the two awns or teeth which crown the fruit.

1. B. *cérnua* L. (*nodding B.*); flowers drooping, bracteas lanceolate entire (longer than the involucre), leaves lanceolate serrate undivided, bristles of the fruit about 3 erect. *E. B.* t. 1114.

Sides of rivulets, ditches, and lakes, frequent. ☉. 7—10. — *Stem* 1—2 ft. and more high, branched and slightly hispid. *Leaves* glabrous, deeply serrate. *Flowers* large, greenish-yellow.

2. B. *tripartíta* L. (*trifid B.*); leaves tripartite, leaflets lanceolate deeply serrate, bristles of the fruit 2—3. *E. B.* t. 1113.

Marshy places, sides of ponds and lakes. ☉. 7—9. — Readily distinguished by its divided *leaves*. The flowers, which are slightly drooping, are smaller than those of *B. cernua*. Both species have occasionally a ray of 3-toothed neuter florets.

25. Diótis *Desf.* Cotton-weed. (Tab. IV. C.)

Pappus 0. *Cor.* with two ears at the base, which border the germen and remain upon the fruit. *Receptacle* chaffy, its scales fringed. *Involucre* imbricated, hemisphærical.—Named from δις, *two*, and ους, ωτος, an *ear*, from the ear-like appendages to the fruit.

1. D. *marítima* Cass. (*Sea-side C.*). Santolina *L.*: *E. B.* t. 141.

Sandy sea-shores, principally on the east and south of England. Jersey. ♃. 8, 9. — *Root* running deep into the sand. *Leaves* numerous, oblong, covered with a white dense tomentum, as are the *scales* of the *involucre*, which in a great measure conceal the small yellow *corollas*.

26. Tanacétum *Linn.* Tansy.

Achenes angled, crowned with a large epigynous disk and a membranous margin. *Receptacle* naked. *Involucre* hemisphærical, imbricated. *Ligulate florets* short and trifid, or wanting.—(Heads *homochromous.*)—Name altered from *Athanasia*; α, *not*, and θανατος, *death*; or that which does not quickly fade.

1. T. *vúlgare* L. (*common T.*); leaves bipinnatifid inciso-serrate. *E. B.* t. 1229.

Borders of fields and road-sides. ♃. 8. — *Stem* 1—3 ft. high. *Flowers* in a terminal *corymb.* — Whole plant bitter and aromatic, much used in medicine, and also in domestic economy.

27. ARTEMÍSIA *Linn.* Wormwood, Southernwood, Mugwort.

Achenes obovate, with a minute epigynous disk. *Pappus* 0. *Receptacle* without scales. *Involucre* ovate or rounded, imbricated. *Ligulate florets*, if any, in a single row, short or slender and awl-shaped. — (Heads *homochromous.*) — Named from *Artemis*, the Diana of the Greeks.

* *All the florets except those of the margin sterile. Receptacle glabrous. Heads monœcious.* Oligosporus.

1. A. *campéstris* L. (*Field S.*); leaves glabrous above silky beneath once or twice pinnate with linear segments, stems twiggy procumbent before flowering, scales of the involucre glabrous with a scarious margin. *E. B.* t. 338.

Dry sandy heaths, rare. Norfolk and Suffolk, principally in the vicinity of Thetford and Bury. Belfast. ♃. 8, 9. — *Florets* yellow: those of the disk, although apparently perfect, have no ovule in the germen, and therefore never produce seed, which is to be met with only in the single row of marginal pistillate filiform florets.

** *Heads heterogamous, florets not all perfect but all fertile. Receptacle glabrous.* Abrotanum.

2. A. *vulgáris* L. (*common M.*); leaves pinnatifid white and woolly beneath, heads somewhat racemed ovate, scales of the involucre woolly. *E. B.* t. 978.

Hedges and waste places, common. ♃. 7—9. — *Stems* 3—4 ft. high, furrowed. *Florets* reddish or brownish yellow.

*** *Heads heterogamous. Receptacle hairy.* Absinthium.

3. A. *Absínthium* L. (*common W.*); leaves bipinnatifid clothed with short silky down, segments lanceolate, heads hemisphærical drooping many-flowered, outer scales of the involucre linear silky, inner ones roundish scarious. *E. B.* t. 1230.

Waste places and about villages, in dry soils. ♃. 8, 9. — *Stem* 1—1½ ft. high, erect. *Panicles* of *flowers* erect, leafy. *Floral leaves* undivided. *Heads* rather large. *Florets* dingy yellow, the marginal pistillate ones very short. — Aromatic and bitter, much used in medicine.

**** *Heads homogamous* (*all the florets perfect and fertile*). *Receptacle glabrous.* Seriphida.

4. A. *marítima* L. (*Sea W.*); leaves downy, radical and lower cauline ones bipinnate, upper often pinnate or pinnatifid, segments linear, heads racemed oblong 3—5-flowered. — *α.* racemes drooping. *E. B.* t. 1706. — *β.* racemes erect. *E. B.* t. 1001. A. Gallica *Willd.*

Sea-shores and in salt marshes. Rare in Scotland. ♃. 8, 9. — What we consider the two *varieties* may be seen growing together,

and sometimes from the same root; but De Candolle attributes to *α.* an *involucre* with constantly 5 florets, the inner scales obtuse; and to *β.* always 3 florets, with the inner involucral scales acute.

5. A. * *cæruléscens* L. (*bluish M.*); leaves hoary most of them lanceolate undivided tapering at the base, lower ones variously lobed, heads 3-flowered oblong-cylindrical spicate, scales of the involucre hoary subcarinate. *E. B.* t. 2426.

Sea-coast near Boston, Lincolnshire, and at Portsmouth. ♃. 8, 9. — No such plant has been found in these localities for many years, and there seems to be no doubt of the allied *A. maritima* having been mistaken for it. (See Dr. Bromfield in the Phytol. iii. p. 491.) It is peculiarly a Mediterranean species.

** *Pappus pilose.* (Gen. 28—33.)

28. Eupatórium *Linn.* Hemp-agrimony.

Achenes angled or striate. *Pappus* pilose and rough. *Receptacle* naked. *Involucre* imbricated. *Styles* much exserted, with long blunt papillose branches. *Florets* all perfect (never yellow).—Named from *Eupator*, the surname of *Mithridates*, king of Pontus, who is said to have brought this plant into use.

1. E. *cannabínum* L. (*common H.*); leaves downy opposite subpetiolate 3—5-partite, their segments lanceolate deeply serrate, the middle one the longest, heads 5—6-flowered, scales of the involucre about 10, 5 outer ones short obtuse. *E. B.* t. 428.

Banks of rivers, and watery places. ♃. 7—9. — *Stems* 3—4 ft. high, branched. *Heads* of *flowers* very numerous, pale reddish-purple, thickly crowded in terminal *corymbs*. — Plant slightly aromatic.

29. Linosýris *Cass.* Goldylocks.

Achenes compressed, silky. *Pappus* in a double row, pilose, rough. *Receptacle* naked, pitted, the pits with fleshy toothed margins. *Involucre* of one row of *scales* surrounded by several long ones, or imbricated. *Style* scarcely longer than the corolla, with short oblong hispid branches. *Anthers* ecaudate. *Florets* all perfect, deeply 5-cleft (yellow).—Named from *Linum*, *flax*, and *osyris*, an appellation given by Pliny to a plant with supple branches and leaves like flax, obviously from the Hebrew *asar* or *oser*, *tying* or *binding*, whence also *osier* in English.

1. L. *vulgáris* L. (*Flax-leaved G.*); herbaceous, leaves linear glabrous, scales of the involucre leafy loosely spreading, Chrysocoma Linosyris *L.*: *E. B.* t. 2505.

Limestone cliffs, rare. Berryhead, Devon; coast between Brighton and Shoreham, Sussex; Whorle-hill, Weston-supra-mare, Somerset; Ormeshead, N. Wales, abundant. ♃. 8, 9. — *Leaves* very numerous, more or less dotted.

30. Antennária *Gærtn.* Everlasting.

Dicœcious. *Pappus* pilose, of the sterile heads thickened or subplumose upwards. *Receptacle* naked. *Involucre* imbricated, the inner ones coloured or scariose at the end. *Anthers* with bristles at the base. — Name from the hairs of the pappus of the sterile florets resembling the *antennæ* of some insects.

1. A. *dioica* Gærtn. (*Mountain E.*, or *Cat's-foot*); sterile shoots procumbent, flowering-stems erect simple, corymbs crowded, root-leaves spathulate woolly beneath, cauline ones nearly equal linear-lanceolate appressed. — *α.* leaves greenish and naked above when old. Gnaphalium *L.: E. B.* t. 267. — *β.* leaves woolly on both sides. A. hyperborea *D. Don: E. B. S.* t. 2640.

Mountain heaths, abundant. — *β.* Isle of Skye. ♃. 6, 7. — *Flowering-stems* 3—8 inches high.

2. A. **margaritácea* R. Br. (*Pearly E.*); sterile procumbent shoots none, stems erect herbaceous tomentose branched above, leaves linear-lanceolate acuminated cottony especially beneath, heads in level topped corymbs, scales of the involucre (white) obtuse. Gnaphalium *L.: E. B.* t. 2018.

Moist meadows. Near Bocking, Essex; Wire Forest, Worcestershire; Lichfield, Staffordshire; Yorkshire, in various places; banks of the Rumney, Glamorganshire; and near Dolgelly, Merionethshire. Jersey and Guernsey. ♃. 8. — A North American species, much cultivated.

31. Gnaphálium *Linn.* Cudweed.

Heads heterogamous, with one or numerous rows of filiform pistillate florets in the circumference. *Pappus* pilose. *Receptacle* flat and quite naked. *Involucre* imbricated, the scales scariose towards the extremity. *Anthers* with bristles at the base. *Style* of the perfect florets with short truncate branches ciliated at the apex. — Name : γναφαλον, *soft down* or *wool*, with which the leaves are covered.

* *Filiform florets in many rows; achenes terete.* Eugnaphalium.

1. G. *luteo-álbum* L. (*Jersey C.*); stems herbaceous simple branched from the base, leaves semiamplexicaul linear-oblong waved woolly on both sides, lower ones obtuse, heads in dense leafless corymbs. *E. B.* t. 1002.

Sandy fields, very rare. Jersey. Between Hanxtown and Little Shelford, Cambridgeshire; and Larlingford, Norfolk. ☉. 7, 8. — *Stem* decumbent at the base, then ascending. *Heads* of *flowers* yellowish and conspicuous, while those of the following species are not so.

2. G. *sylváticum* L. (*Highland C.*); stem simple nearly

erect downy, heads forming a leafy spike, leaves linear-lanceolate downy.—*α. rectum*; leaves narrow usually nearly glabrous above, spike axillary interrupted. G. rectum *Huds.*: *E. B.* t. 124.—*β. norvegicum*; leaves lanceolate woolly on both sides, spike terminal continuous. G. sylvaticum *E. B.* t. 913. G. Norvegicum *Jacq.*

α. Groves, thickets and pastures, frequent in Scotland.—*β.* rare and chiefly on the mountains once covered by the Caledonian Forest. Benchat, 5 m. N. of Blair Athole; mountain N. of Loch Ericht; and Ben Wyvis, in Ross-shire; *Mr. J. Mackay.* Loch-na-Gar; *Dr. Balfour.* Canlochan, Forfarshire; *Mr. J. Henderson.* ♃. 7—9.—Scales of the involucre oblong, shining with a broad brown border. Sir J. Smith in his Engl. Flora (iii. pp. 414—416.) has incorrectly removed to our *var. β.* those states of *G. supinum* which have spiked or tufted sessile *heads* of *flowers.*

3. G. *uliginósum* L. (*Marsh C.*); stem very much branched diffuse woolly, leaves linear-lanceolate downy, heads in terminal crowded tufts which are shorter than the leaves. *E. B.* t. 1194.

Sandy and wet places; especially where water occasionally stands. ☉. 7, 9.—A span high, much branched. *Heads* of *flowers* 2—3 together among the closely placed upper *leaves* small, sessile, forming oblong clusters at the extremity of the branches. *Scales* of the *involucre* yellowish-brown, shining, glabrous.

** *Filiform florets in a single row; achenes compressed.* Omalotheca.

4. G. *supinum* L. (*dwarf C.*); cæspitose, stem decumbent branching only from the base, flowering-stems erect, heads 1—5, leaves linear downy on both sides.—*α.* heads rather distant stalked. *E. B.* t. 1193.—*β.* heads approximated sessile. G. sylvaticum *Sm.* (partly).

Summits of the Highland mountains, abundant. ♃. 7, 8.—Of our two varieties, *β.* is by far the most common, and is that generally known as *G. supinum* abroad; while our *α.* or Smith's plant is the *var. γ.* of Persoon. *Achenes* white from numerous short appressed silky hairs, those towards the extremity being a little longer and forming as it were a very short outer *pappus*; in *G. sylvaticum*, the achenes are yellowish, sprinkled with a very few short hairs, and when the pappus is removed a callous ring or disk is visible not surrounded by a circle of hairs; but the true distinction between these two species consists in the form of the achene and number of rows of the marginal florets.

32. Filágo *Linn.* Filago.

Heads heterogamous, with one or more rows of filiform pistillate florets in the circumference. *Pappus* pilose, of the outermost row of pistillate florets very caducous or wanting. *Receptacle* conical, with 1—5 rows of scales within or among the filiform florets. *Involucre* imbricated, conical, of a few

acuminate scariose scales. *Anthers* with bristles at the base. *Style* of the perfect florets with short truncate branches ciliated at the apex.—Name: *filum*, *thread*, the whole plant being covered with slender thread-like hairs.

* *Scales of the receptacle in* 1—2 *rows.* Oglifa.

1. F. *Gállica* L. (*narrow-leaved F.*); stem erect dichotomous, leaves linear-acute somewhat revolute on the margin, heads crowded in axillary and terminal tufts which are shorter than the leaves. Gnaphalium *Huds.*: *E. B.* t. 2369.

Gravelly and sandy fields. Castle Heveningham, and Berechurch, Essex; Hertfordshire; and said also to be found in Kent, Suffolk, Worcester, Derby, Fife, and Forfar. ☉. 7—9.— *Stem* about a span high, slender, leafy. *Heads* of *flowers* small, oblong, in rather distant, leafy fascicles; outer *scales* of the *involucre* cottony; inner ones glabrous at the points, gibbous at the base and inclosing the marginal florets. Not perhaps truly distinct from the following; in both there are two rows of pistillate florets and scales of the receptacle, which latter are not larger than the inner scales of the involucre, and we fear no other distinctive marks are to be relied on in this genus.

2. F. *mínima* Pers. (*least F.*); stem erect dichotomously branched, leaves linear-lanceolate acute cottony flat appressed, heads conical few in lateral and axillary tufts which are longer than the leaves. Gnaphalium *Sm.*: *E. B.* t. 1157. F. montana *DC.* (not *Linn.*)

Dry and gravelly places, frequent. ☉. 6—9.— *Stems* 4—6 inches high, slender, branched above in a dichotomous manner. *Involucres* broad at the base; *scales* cottony glabrous and slightly obtuse at the point. *Florets* yellowish.— *F. montana* L. (the same as *F. arvensis* L.) differs from this in having a solitary row of pistillate florets separated from the tubular ones by a row of scales larger than the true scales of the involucre: it is so common on the Continent that it may have been passed over in this country.

** *Scales of the receptacle and pistillate florets in* 5 *rows.* Gifola.

3. F. *Germánica* L. (*common F.*); stem erect usually proliferous at the summit, leaves downy, heads globose-capitate in the axils of the branches and terminal, scales of the involucre cottony with the points cuspidate and glabrous.— *α*. heads obscurely 5-angled not surrounded by leaves, scales of the involucre longitudinally folded yellowish-white at the apex, leaves oblong or lanceolate, acute or apiculate. Gnaphalium *Huds.*: *E. B.* t. 946.— *β*. heads prominently 5-angled surrounded by 1—2 blunt leaves, scales cymbiform purplish towards the apex, leaves grass-green with a yellowish tomentum lanceolate obtuse mucronate. F. apiculata *G. Sm.* —*γ*. heads sharply pentagonal surrounded by 2—3 acute leaves,

scales cymbiform yellowish-white at the apex, leaves of a leaden grey colour spathulate. F. spathulata *Presl.*

Sandy and gravelly places, and dry pastures. — β. and γ. in various places in England. ☉. 7—9. — *Stems* 6—8 inches high, erect, very leafy, terminated by a globular tuft of small ovate or conical *heads* of flowers, from beneath which usually spring 2—3 or more horizontal branches, in a proliferous manner, each terminated by a head of flowers. This curious mode of growing occasioned the term of *Herba impia* to be applied by the old Botanists to this plant, as if the offspring were undutifully exalting itself above the parents. In α. and β. the heads are half sunk in tomentum, and scarcely at all so in γ.

33. Petasites *Desf.* Butter-bur.

Subdiœcious. *Heads* monœcious (of two kinds and on different plants; either with many central tubular sterile *florets* surrounded by a row of truncated filiform fertile pistillate ones; or with 1—5 central sterile tubular florets surrounded by many rows of filiform fertile pistillate ones). *Pappus* pilose. *Anthers* without bristles at the base. *Receptacle* naked. *Involucre* imbricated in two rows of lanceolate herbaceous scales.— (Scapes *with a many-headed thyrsus, appearing before the leaves*).— Name : πετασος, a *covering to the head* or an *umbrella*, from the great size of its foliage.

1. P. *vulgáris* Desf. (*common B.*); leaves roundish-cordate unequally toothed downy beneath, the lobes approximate.— A. florets nearly all sterile. Tussilago Petasites *L.: E. B.* t. 431. — B. florets nearly all fertile. Tuss. hybrida *L.: E. B.* t. 430.

Wet meadows, to which it is very injurious, and road-sides. ♃. 3—5. — *Root* extensively creeping, and thus multiplying the plant. *Leaves* very large. *Flowers* (appearing before the leaves) of a pale fresh colour, smaller, more lax, and in a longer thyrsus on the fertile plant. The early blossoming of this rank weed induces the Swedish farmers to plant it near their bee-hives. Thus we see in our gardens the bees assembled on its affinities, *P. alba* and *fragrans*, at a season when scarcely any other flowers are expanded.

[Of *Homogyne alpina* Cass, or *Tussilago alpina* L., there is a specimen in herb. Brodie, from G. Don, with the following station attached to it. : " On rocks by the sides of rivulets on the high mountains of Clova, as on a rock called Garry-barns; " and the same is mentioned in Headrick's Agric. of Forfarshire; but we are not on that account prepared to admit the plant as indigenous.]

Subtribe II. RADIATÆ. *Heads with a ligulate ray* (Tab. IV. D.) (Gen. 34—46.)

* *Pappus pilose in the florets of the disk, sometimes wanting in those of the ray.* (Gen. 34—42.)

34. TUSSILAGO *Linn.* Colt's-foot.

Heads monœcious, all alike. *Achenes* terete. *Pappus* pilose. *Florets* of the ray long, narrow, numerous in many rows; of the disk few, sterile (both yellow). *Anthers* without bristles at the base. *Receptacle* naked. *Involucre* formed of a single row of equal linear scales. (Scapes *single-flowered, appearing before the leaves.*)— Name altered from *tussis*, a *cough*, in the cure of which the plant has been employed.

1. T. *Fárfara* L. (*Colt's-foot*); scape single-flowered imbricated with scales, leaves cordate angular toothed downy beneath. *E. B.* t. 429.

Moist and clayey soils, too abundant. *Fl.* March, April, before the leaves. ♃. — *Flowers* yellow; *florets* of the *disk* few. The down of the leaves makes good tinder. The *leaves* themselves have been used medicinally, as an infusion, or smoked like tobacco, for the relief of asthma.

[*Nardosmia fragrans* Reich., or *Tuss. fragrans* L., is said to be naturalised in the south of England and Wales. This genus differs only from *Petasites* by the pistillate florets having a (sometimes minute) ligule.]

35. ERÍGERON *Linn.* Flea-bane.

Achenes compressed. *Pappus* pilose, rough. *Florets* of the disk fertile; of the ray numerous, in several rows very narrow (of a different colour from the disk). *Receptacle* naked. *Involucre* imbricated with linear scales. *Anthers* without bristles at the base.— Named from ηρι, *early*, and γερων, an *old man*; from the early ripening of the gray seed-down.

1. E. * *Canadénsis* L. (*Canada F.*); usually hairy, leaves lanceolate nearly entire harshly ciliated, heads numerous panicled, ray shorter than the involucre. *E. B.* t. 2019.

Waste and cultivated ground, in England, occasionally. ☉. 8, 9. — *Florets* of the *disk* whitish-yellow; of the *ray* whitish, tinged with red, scarcely longer than the *pappus*.

2. E. *ácris* L. (*blue F.*); peduncles 1-headed alternate somewhat corymbose, ray erect scarcely longer than the disk, inner pistillate florets filiform, pappus as long as the florets of the ray, leaves lanceolate obtuse. *E. B.* t. 1158.

Dry gravelly or chalky pastures, walls, &c. ♂. 7, 8. — *Stems* 1—1½ ft. high; whole plant scabrous, hispid, erect, panicled above

and leafy; *heads* of flowers terminal, pedunculate from the axils of the leaves. *Leaves* below tapering into a foot-stalk. *Florets* of the *disk* yellow; of the *ray* ligulate, purplish. *Pappus* tawny.

3. E. *alpinus* (*alpine F.*); stems with one or few heads, florets of the ray nearly twice as long as the involucre, innermost pistillate florets tubular-filiform without a ligule, leaves lanceolate, radical ones spâthulate. *E. B.* t. 464.—E. uniflorus *L.*: *E. B.* t. 2416.

Highland mountains, not uncommon on the Breadalbane and Clova ranges. ♃. 7, 8.—Hairy or hispid, like the last, but with *leaves* much longer in proportion. *Stem* 3—5 inches high, simple with rarely more than one *head* of *flowers* at the summit. The *ligules* of the pistillate *florets* become gradually narrower and sometimes shorter as they approach the disk, the innermost row being wholly or partially destitute of them. We have examined original specimens of Smith's *E. uniflorus* from G. Don from Ben Lawers: they have quite the structure of the florets of *E. alpinus*, although the ligules be shorter and *more erect* from growing in a more exposed situation: the involucre, although rather more hairy, is not woolly as in the arctic *E. uniflorus* of Linnæus.

36. A'ster *Linn.* Starwort. Michaelmas Daisy.

Achenes compressed. *Pappus* pilose, in many rows. *Receptacle* naked. *Involucre* imbricated, sometimes with a few scales on the peduncle. *Anthers* without bristles at the base. *Florets* of the disk yellow; of the ray purple or white, and in 1 or very rarely 2 rows.—Name: *aster*, a *star*, which the flowers resemble.

1. A. *Tripólium* L. (*Sea S.* or *M.*); stem glabrous corymbose, leaves linear-lanceolate fleshy obscurely 3-nerved, scales of the involucre lanceolate membranous obtuse all imbricated, the inner ones longer. *E. B.* t. 87.—Tripolium vulgare *Nees.*

Salt-marshes, frequent. ♃. 8, 9.—The florets of the ray are sometimes wanting.

37. Solidágo *Linn.* Golden-rod.

Achenes terete. *Pappus* pilose, rough, in a single row. *Receptacle* naked. *Involucre* closely imbricated. *Anthers* without bristles at the base. *Florets* of the ray few, in one row, and, as well as those of the disk, yellow.—Name: *solidare*, to *unite*; from the vulnerary properties that have been attributed to some species.

1. S. *Virgaúrea* L. (*common G.*); cauline leaves lanceolate the lower ones elliptical, racemes panicled erect crowded, involucral scales lanceolate acute, achenes slightly downy. *E. B.* t. 301.—β. small, with broader radical leaves. S. Cambrica *Huds.*

Woods and thickets.—β. in mountainous countries. 2. 7—9. —Lower *leaves* broad, stalked. Very variable in its size, and in its more or less compact *inflorescence*. Used as a vulnerary and diuretic.

[*S. lanceolata* L. has been sometimes found naturalised: it is a N. American species.]

38. Senécio *Linn.* Groundsel. Ragwort. Fleawort.

Achenes terete, all of them with a pilose *pappus*. *Receptacle* naked. *Involucre* cylindrical, its scales linear, equal, with or without several smaller ones at the base, their tips often brown. *Anthers* without bristles at the base. *Style* scarcely longer than the corolla, truncate and ciliated at the extremities of its branches. (*Flowers*, in the British species, yellow, their ray sometimes wanting.)—Named from *senex*, an *old man*. (See *Erigeron*.)

* *Florets of the ray ligulate and rolled back, or wanting.*

1. S. *vulgáris* L. (*common G.*); ray revolute or usually wanting, leaves semiamplexicaul pinnatifid toothed, heads in clustered corymbs, involucre conical glabrous, outer scales very short, achenes silky. *E. B.* t. 747.

Waste ground, fields and hedges, abundant. ☉. 1—12.—A span to a foot high. *Heads* of *flowers* small, yellow. Birds are fond of the buds and young leaves.

2. S. *viscósus* L. (*stinking G.*); ray revolute, leaves pinnatifid glandular-hairy viscid, scales of the involucre lax hairy, stem branching diffuse, involucre viscid, outer scales half the length of the inner, achenes glabrous. *E. B.* t. 32.

Waste ground, especially on chalky or gravelly soil, in many places. ☉. 7, 8.—*Stems* 1—2 feet high, much branched and spreading. Remarkable for its viscid hairs and fetid smell.

3. S. *sylváticus* L. (*Mountain G.*); ray revolute sometimes wanting, leaves sessile pinnatifid lobed and toothed often auricled at the base, involucre downy, outer scales very short glabrous, stem erect straight, heads corymbose, achenes silky. *E. B.* t. 748.—β. leaves distinctly auricled and amplexicaul at the base. S. lividus *L.?*: *E. B.* t. 2515.

Dry upland soils, banks, and gravelly pastures. ☉. 7—9.—*Stem* 1½—2 ft. high. Plant with a disagreeable smell, but not so powerful as that of *S. viscosus*. The *S. lividus* of Linn. is a Spanish species, and unknown to us; but whatever it be, we fear the plant of *E. Bot.* cannot be considered specifically distinct from the present.

** *Heads with a spreading ray. Involucre with small scales at the base. Leaves pinnatifid.*

4. S. **squálidus* L. (*inelegant R.*); ray spreading its ligules elliptical entire, leaves glabrous pinnatifid with distant oblong and toothed segments, involucre glabrous its outer scales few small, achenes silky. *E. B.* t. 600.

On walls in and about Oxford. Walls and rubbish at Biddeford, Devon. ⊙. 6—10. — A most distinct species, but scarcely indigenous.

5. S. *tenuifólius* Jacq. (*hoary R.*); ray spreading its ligules oblong, leaves closely pinnatifid pale and downy beneath their margins somewhat revolute, stem erect loosely cottony, all the achenes hairy. *E. B.* t. 574. S. erucæfolius *L.?*

Hedges and road-sides in England, especially in a chalky or gravelly soil. Woodhall, near Airdrie; Berwickshire, in various places. ♃. 7, 8. — Allied to the following, but with more regular, less divided, and less spreading segments to the *leaves*. *Root* creeping.

6. S. *Jacobæ'a* L. (*common R.*); ray spreading, leaves lyrate bipinnatifid, segments divaricated toothed glabrous, stem erect, achenes of the disk hairy, those of the ray glabrous, involucre hemispherical. *E. B.* t. 1130.

Way-sides and neglected pastures, too plentiful. ♃. 7—9. — *Stems* 2—3 feet high, striate, branched. *Heads* of *flowers* large, golden-yellow, in erect *corymbs*. A *var.* is occasionally found without the ray.

7. S. *aquáticus* Huds. (*Marsh R.*); ray spreading, leaves lyrate serrate glabrous the lowermost obovate and undivided, involucre hemispherical, achenes all glabrous. *E. B.* t. 1131.

Wet places and by the sides of rivers and ditches. ♃. 7, 8. — *Heads* of *flowers* larger than in the last species.

*** *Heads with a spreading ray. Involucre with small scales at the base. Leaves undivided.*

8. S. *paludósus* L. (*great Fen R.*); ray spreading its ligules toothed, leaves semiamplexicaul lanceolate sharply serrate somewhat woolly beneath, stem perfectly straight hollow rather woolly, corymbs terminal spreading, bracteas subulate. *E. B.* t. 650.

Rare; ditches and fens in the east of England; Suffolk, Lincolnshire, and Cambridgeshire. ♃. 6, 7. — *Stem* 5—6 feet high. *Leaves* and *heads* of *flowers* large, the latter of many linear toothed rays.

9. S. *Saracénicus* L. (*broad-leaved G.*); ray spreading its ligules nearly entire, leaves lanceolate sessile minutely and irregularly serrate glabrous, stem erect solid glabrous, corymbs

terminal of rather few flowers, bracteas linear-setaceous. *E. B.* t. 2211.

Moist meadows and pastures, in several parts of England and Scotland, but very local, and probably often escaped from gardens. Woods at Bantry. ⊙.• 7, 8. — *Stem* 3—5 feet high : habit of the last ; *heads* of *flowers* much smaller, with broader *florets* of the *circumference*, which are sometimes wanting.

**** *Heads with a spreading ray. Involucre without scales at the base. Leaves nearly entire.*

10. S. *palústris* DC. (*Marsh F.*) ; shaggy, stem much branched fistulose, leaves broadly lanceolate semiamplexicaul, lower ones sinuato-dentate, heads corymbose, achenes glabrous many-ribbed. Cineraria *L.* : *E. B.* t. 151.

Margins of pools and ditches, rare ; chiefly in Norfolk and Cambridgeshire. ♃. 6, 7. — *Ligulate florets* about 20.

11. S. *campéstris* DC. (*Field F.*) ; woolly, stem simple, root-leaves elliptical narrowed below nearly entire those of the stem (small) lanceolate, flowers umbellate, achenes downy. Cineraria *Retz.* C. integrifolia *With.* : *E. B.* t. 152.

Chalky downs in the middle and S. of England and on maritime rocks, Hoyhead. ♃? ♂? 5, 6. — *Ligulate florets* 9—12. Ribs of the *achenes* not prominent.

39. Dorónicum *Linn.* Leopard's-bane.

Achenes terete. *Pappus* pilose, wanting to the florets of the ray. *Receptacle* naked or nearly so. *Involucre* with the scales equal, in a double row. *Anthers* without bristles at the base. *Style* scarcely longer than the corolla, truncate and ciliated at the extremity of its branches. (*Flowers* yellow.) — Named from δωρον, a *gift*, and νικη, *victory*, because it is said to have been formerly used to destroy wild beasts, whence the English name of *Leopard's-bane ;* or, some say, from *Doronigi*, or *durungi*, the Arabic name of the *Leopard's-bane*, Latinized by earlier botanists into *doronicum*, and enumerated by Linnæus among barbarous names which ought to be rejected. He, however, retained it, perhaps because its sound, if not its sense, is Greek.

1. D. * *Pardaliánches* L. (*great L.*) ; leaves cordate toothed the lowermost on long naked petioles, the intermediate with the petioles dilated into two broad semiamplexicaul ears at the base, the uppermost sessile and amplexicaul. *E. B. S.* t. 2654.

Catton, by Norwich ; Yorkshire ; Mountains of Northumberland. Den of Dupplin and Dalkeith park, &c., Scotland. ♃. 5—7. — *Stem* simple or corymbosely branched, the lateral branches being much longer than the shortly stalked head that terminates the stem.

Achenes of the disk hairy; of the ray glabrous (or slightly hairy. *DC.*).

2. D. *plantagíneum* L. (*Plantain-leaved L.*); leaves toothed, radical ones on naked stalks ovate or slightly cordate produced at the base, cauline ones sessile except the lowest which has a winged stalk with amplexicaul auricles, intermediate ones cordate oblong, upper ovate-acuminate, achenes of the ray glabrous. D. Pardalianches *E. B.* t. 630.

Salinghall, and Widdington, Essex; Yorkshire. Den of Dupplin; Saline, Fifeshire; Cleish; &c. ♃. 6, 7. — *Stem* simple or branched, *heads* on long leafless peduncles. The allied *D. scorpioides* has the *achenes* of the ray as hairy as those of the disk.

40. I'NULA *Linn.* Inula.

Achenes terete or angled. *Pappus* pilose, in 1 row. *Receptacle* naked. *Involucre* imbricated. *Anthers* with bristles at their base. (*Flowers* yellow.) — Name said to be a contraction of *Helenium*, the plant being supposed to have sprung from the tears of Helen.

1. I. *Helénium* L. (*Elecampane*); leaves amplexicaul somewhat toothed ovate wrinkled, downy beneath, outer scales of the involucre ovate downy reflexed leafy, inner ones obovate, ray twice as long as the disk, achenes 4-angled glabrous. *E. B.* t. 1546.

Moist pastures, rare, but found in several places of England, and Ireland. Not wild in Scotland. ♃. 7, 8. — *Stem* 3—5 feet high, branched. *Heads* large, terminal, solitary, with many narrow, tricuspidate yellow *rays*.

2. I. *Conýza* DC. (*Ploughman's Spikenard*); leaves pubescent ovate-lanceolate serrate the upper ones entire, stem herbaceous corymbose, scales of the involucre all linear recurved leafy, ray scarcely longer than the disk, achenes terete slightly hairy. Conyza squarrosa *L.*: *E. B.* t. 1195.

Frequent on chalky or clayey soils. Rare, if really wild, in Scotland. ☉. 8—10. — *Stem* 2—3 feet high. *Panicle* leafy, with the leaves entire. Lower *leaves* stalked. *Heads* almost discoid: *florets* of the circumference very small, filiform with a short ligule.

3. I. *crithmoídes* L. (*golden-Samphire*); leaves linear fleshy generally 3-toothed at the extremity, scales of the involucre appressed linear acuminate, ray nearly twice the length of the disk, achenes terete villous. *E. B.* t. 68.

South and west shores of England and Wales, in salt-marshes, and on sea-side rocks; extending as far north as Galloway in Scotland. Howth, Ireland. ♃. 7, 8. — One foot high, a little branched at the summit, each branch bearing a solitary *head* of *flowers*.

41. PULICARIA *Gærtn.* Flea-bane.

Achenes somewhat terete. *Pappus* double: *outer one* short membranous; *inner* pilose, rough. *Receptacle* naked. *Involucre* hemispherical, closely imbricated with numerous scales. *Anthers* with bristles at their base. (*Flowers* yellow.)—Name: *pulex*, a *flea*, which is supposed to be driven away by its powerful smell.

1. P. *dysentérica* Cass. (*common F.*); leaves oblong cordate or sagittate and amplexicaul at the base wrinkled downy, stem woolly panicled, scales of the involucre setaceous, ray twice as long as the disk, outer pappus cup-shaped crenulate. Inula *L.*: *E. B.* t. 1115.

Moist and watery places, frequent in England and in the county of Dublin. Rare in Scotland; Mull of Galloway; Bennanhead, Arran. ♃. 7—9.—About 1 foot high.

2. P. *vulgáris* Gærtn. (*small F.*); leaves lanceolate wavy hairy narrow at the base and semiamplexicaul, stem much branched hairy, ray scarcely longer than the disk, outer pappus setulose-laciniate. Inula Pulicaria *L.*: *E. B.* t. 1196.

Moist sandy places, especially where water has stood, in England: not found in Scotland or Ireland. ♃. 8, 9.

** *Pappus none, or of short teeth or scales only.* (Gen. 42—46.)

42. BÉLLIS *Linn.* Daisy. (Tab. IV. D.)

Achenes compressed, with a minute epigynous disk. *Pappus* none. *Receptacle* naked, conical. *Involucre* hemispherical, its scales obtuse, equal, in a single row. (Florets of the disk yellow, those of the ray white tinged with red.)—Named from *bellus, pretty.*

1. B. *perénnis* L. (*common D.*); perennial, scape single-headed, leaves spathulate obovate crenate 1-nerved. *E. B.* t. 424.

Pastures, frequent. ♃. 2—10.—Who is there, whether in youth or in age, that is not sensible of the charms of this "modest crimson-tipped flower"? It is, therefore, in France called *Marguerite*, a term expressive of beauty, from *margarita*, a *pearl.*

43. CHRYSÁNTHEMUM *Linn.* Ox-eye.

Achenes of the disk somewhat terete: epigynous disk large. *Pappus* 0. *Receptacle* naked. *Involucre* hemispherical or nearly flat: the scales imbricated, membranaceous at their margins.—Name: χρυσος, *gold*, and ἀνθεμον, a *flower*, from the colour of the blossoms in some of the species.

* *Achenes of the disk and ray similar.* Leucanthemum.

1. C. *Leucánthemum* L. (*great white O.*); leaves oblong obtuse cut and pinnatifid at the base, radical ones obovate petiolate, stem erect branched (ray white). *E. B.* t. 601.

Dry pastures, abundant. 4. 6—7. — *Stems* 1—2 feet high, furrowed. *Heads* of *flowers* large, their *disk* yellow, the *ray* white.

** *Achenes of the ray angled and somewhat winged.*

2. C. *ségetum* L. (*Corn Marigold, yellow O.*); leaves amplexicaul glaucous inciso-serrate above toothed at the base, (ray yellow). *E. B.* t. 540.

Corn-fields, frequent; rare about Edinburgh. ☉. 6—10. — One foot or more high. *Flowers* large, deep yellow.

44. Matricária *Linn.* Wild-Chamomile. Feverfew.

Achenes all angular, crowned with a large epigynous disk. *Pappus* a membranaceous border, or wanting. *Receptacle* naked. *Involucre* conical, hemispherical or nearly flat, the scales imbricated, usually membranaceous at their margins. — Named from its reputed medicinal virtues.

1. M. *Parthénium* L. (*common F.*); leaves petiolate flat bipinnate the segments ovate cut, peduncles branched corymbose, stem erect, involucre hemispherical downy, receptacle convex, pappus short toothed. Pyrethrum *Sm.: E. B.* t. 1231.

Waste places and in hedges. 4. 7—9. — *Stem* 1—2 ft. high, branched. *Disk* yellow; *ray* very short, white. *Plant* bitter and tonic.

1. M. *inodóra* L. (*Corn W.*, or *scentless Mayweed*); leaves sessile bipinnatifid the segments capillary, stem branched spreading, receptacle convex, pappus entire or 4-lobed. — *α.* receptacle ovate, "scales of the involucre lanceolate with a fuscous torn margin." — *Bab.* Pyrethrum *Sm.: E. B.* t. 676. — *β. maritimum;* leaves fleshy, receptacle hemispherical "scales oblong with pale entire margin." *Bab.* M. maritima *L.* Pyrethrum *E. B.* t. 979.

Fields and way-sides, common. — *β.* sea-coast in many places, especially in Scotland. ☉. 6—11. — *Stem* about 1 foot high. *Flowers* large, upon long naked peduncles. *Disk* very convex: *ray* large. Plant slightly aromatic. *Achenes* with 3 prominent thick smooth ribs, and more or less rugose intermediate species; of these last the two internal ones are narrow, the external one broad and marked at the apex with an imperfect smooth rib, on each side of which there is an oblong smooth glandular depression. In the *var. β.* the ribs are broader than in *var. α.*, and consequently all the intervening spaces and the grandular depressions are narrower; but they seem to vary in this respect in the same head.

3. M. *Chamomílla* L. (*wild C.*); leaves glabrous bipinnatifid

the segments capillary, involucre nearly plane its scales obtuse, receptacle cylindrical-oblong hollow. *E. B.* t. 1232.

Corn-fields and waste ground, in various places. ☉. 6—8. — *Stem* about 1 foot high, erect and branched. *Heads* of *flowers* with a conical *disk*; the *ray* very obtuse, truncate and toothed. *Receptacle* narrow, much elevated, twice as long as broad, and often acute. *Scales* of the *involucre* scarcely so membranaceous at the margin as in the preceding species. This has a bitter taste, and a faint but aromatic smell, not unlike that of the common or true *Chamomile* (*Anthemis nobilis*).

45. A'NTHEMIS *Linn.* Chamomile.

Achenes terete or obscurely 4-angled. *Pappus* a membranaceous border or 0. *Receptacle* convex, chaffy. *Involucre* hemispherical or nearly plane, the scales imbricated, membranaceous at their margins. *Florets* of the *disk* terete, of the *ray* oblong-linear. — Name: *ανθεμις*, a *flower*, from the profusion of its blossoms.

* *Florets of the ray with a style.*

† *Scales of the receptacle thin, membranous, obtuse.*

1. A. *nóbilis* L. (*common C.*); leaves bipinnate segments linear-subulate a little downy, receptacle conical its scales scarcely longer than the disk. *E. B.* t. 980.

Dry gravelly pastures and waste places, in several parts of England. Isles of Cumbrae and Bute, Scotland. Kerry, Ireland. ♃. 7—9. — *Stem* about a foot long, procumbent and much branched; each branch terminated by a single *flower*, whose *disk* is yellow, at length conical, and *ray* white. The whole plant is intensely bitter, highly aromatic and much used medicinally. Its principal virtues are supposed to reside in the *involucre*, which contains an essential oil.

†† *Scales of the receptacle with an acute rigid point.*

2. A. **A'nglica* Spr. (*Sea Ch.*); leaves pinnatifid somewhat hairy, lobes inciso-serrate acute bristle-pointed rather fleshy, "receptacle flat, its scales subulate shorter than the unopened florets, achenes crowned with a very narrow entire border." *Bab.* A. *maritima* L.?: Sm.? *E. B.* t. 2370.

Sea-coast at Sunderland; *Mr. Robson*; *Mr. Backhouse* (1844). ♃. 7. — With this we are entirely unacquainted: it is probably some Continental species cast upon our shores, and in an abnormal state. De Candolle and others maintain that it is quite different from the true plant of Linnæus, which is apparently that described by Smith in the English Flora, a species supposed to be peculiar to the south of Europe, having fleshy glabrous or hoary dotted leaves, and an unequally and broadly 1—2-toothed margin to the achenes. — The plant mentioned in our fifth edition as having been found at Dunboy Quay, Bearhaven, Co. Cork, Ireland, by Mr. W. Wilson, proves to be *Anacyclus radiatus* Loisel, brought there perhaps with ballast.

3. A. **tinctória* L. (*Ox-eye C.*) ; leaves bipinnatifid serrate downy beneath, stem erect branched subcorymbose, receptacle hemispherical, achenes crowned with an entire border. *E. B.* t. 1472.

Banks of the Tees, Durham ; Essex ; and near Forfar, Scotland. ⊙ or ♂. 7, 8. — *Stem* a foot or more high, cottony, as are the *scales* of the *involucre*. *Flowers* solitary, large, *entirely* yellow. A very doubtful native, not now found in any of the stations assigned for it ; it is often cultivated.

4. A. *arvénsis* L. (*Corn C.*) ; leaves bipinnatifid segments linear-lanceolate pubescent, receptacle conical its scales lanceolate, fruit crowned with an entire pappus. *E. B.* t. 602.

Corn-fields and way-sides, in several places, but very local. About Dunfermline ; near Edinb. and Linlithgow ; between Ayr and Prestwick ; Lanarkshire and Forfarshire. ♂. 6—8. — *Stem* upright, much branched, and, as well as the *leaves*, hoary with down ; each branch terminated with a large *flower*, whose *disk* is yellow, the *ray* broad and white. *Florets* of the *ray* sometimes sterile ; in which case almost the only certain character connected with the flowers, that will distinguish this species from *A. Cotula*, is the presence of a style.

** *Florets of the ray without any trace of a style. Scales of the receptacle with an acute point.*

5. A. *Cótula* L. (*stinking C.*) ; leaves bipinnatifid glabrous their segments subulate, receptacle conical its scales linear-setaceous, pappus none, tube of the corolla 2-winged. *E. B.* t. 1772.

Waste places, corn-fields, and by road-sides. ⊙. 6—9. — *Stem* a foot or more high, glabrous. *Heads* of *flowers* solitary, terminal, their *disk* convex, pale yellow : *ray* rather large, white, its florets *neuter* (inaccurately represented with a style in E. Bot.). The whole plant has a fetid smell, and is said to blister the hands of those who gather it. When examined with a microscope, it is seen to be sprinkled all over with little glands, in which the acrid matter is probably lodged. The Scotch stations, and many of those in the N. of England, usually given for this species, belong to *A. arvensis*.

46. Achilléa *Linn.* Yarrow. Milfoil.

Pappus 0. *Receptacle* flat, chaffy. *Involucre* ovate, imbricated. *Florets* of the *ray* 5—10, roundish or obcordate. — So named because its healing virtues were said to be first discovered by *Achilles*.

1. A. *Ptármica* L. (*Sneeze-wort Y.*) ; leaves shining glabrous linear-lanceolate acuminate uniformly and sharply serrate, serratures appressed scabrous at the margin, ray 8—12-flowered. *E. B.* t. 757.

Moist meadows and pastures, especially in mountainous districts.

4. 7, 8. — *Stem* 1—3 feet high, erect, terminating in a rather large *corymb*, the *disk* as well as *ray* of whose *flowers* is white. *Leaves* sometimes slightly dotted. — When dried and pulverised, the plant has been employed to excite sneezing.

2. A. **decólorans* Schrad. (*dotted-leaved Y.*); leaves downy closely dotted linear-lanceolate coarsely and doubly serrate pectinate at the base, serratures spreading, segments at the base radiating, ray 5—6 flowered. A. serrata *Sm.* (not *Retz*): *E. B.* t. 2531.

Near Matlock, Derbyshire. Somerset. 4. 9. — Commonly cultivated in gardens under the name of *A. alpina*, to which, as well as to *A. serrata*, it appears to approach very closely; the native country of all the three would seem to be Siberia, if indeed some be not mere garden productions. *Ligules* buff-coloured.

3. *A. *tanacetifolia* All.? (*Tansey-leaved Y.*); leaves bipinnatifid with a broadly winged serrate midrib, segments broad and teeth of the midrib inciso-serrate.

Ringing Low, near Sheffield; Cromford Moor, Derbyshire. 4. 7. — We have seen no British specimens, and do not know what species is meant; the above character is therefore abridged from Mr. Babington's manual, who adds that the root-leaves have a lanceolate, the stem ones an oblong outline, usually bipinnatifid, but sometimes only once pinnatifid; rachis with large inciso-serrate teeth especially just under the pinnæ. It is probable that the above is *A. dentifera* D. C., or *A. magna* All.; the true *A. tanacetifolia* is said by De Candolle to have an entire rachis. The allied species are so much *cultivated* in gardens, that we doubt of this and the last being truly indigenous.

4. A. *Millefólium* L. (*common Y.* or *M.*); leaves deeply bipinnatifid, lobes incise, segments linear acute, stems furrowed, scales of the involucre nearly glabrous. *E. B.* t. 758.

Pastures and way-sides, frequent. 4. 6—9. — *Heads* of *flowers* small, white, or sometimes rose-coloured. *Leaves* woolly or nearly glabrous. The quality of this plant is highly astringent, and the Highlanders are said to make an ointment of it, which dries and heals wounds.

5. A. **tomentósa* L. (*woolly yellow M.* or *Y.*); leaves woolly pinnatifid, lobes crowded 2—3-cleft, segments linear acute, corymbs repeatedly compound, scales of the involucre woolly. *E. B.* t. 2532.

Dry hilly pastures, in Scotland. Spittle-hill, north-west of Balvie, Dumbartonshire; and near Paisley. Auchlunkart, Bamffshire; *P. Stewart*, Esq. Near Newcastle, Co. Down, Ireland; *Miss Keown.* 4. 8. — *Stem* a span or rather more in height. Readily recognised by its small size, downy *leaves*, and much branched *corymbs* of yellow *flowers*. Formerly much cultivated as a medicinal plant, as well as for its beauty.

Anomalous Genus.

47. XÁNTHIUM[1] *Linn.* Bur-weed. (Tab. V.)

Monœcious. — *Barren fl. Involucre* of few scales, with many small capitate *flowers*, upon a common receptacle. *Cal.* 0. *Cor.* obovate, sessile. *Anthers* terminating a tube which is inserted at the base of the cor. *Germen* abortive. — *Fertile fl. Involucre* single, prickly, with two beaks, entirely closing 2 flowers; the 2 *stigmas* only protruded from small apertures within the beaks. *Cal.* 0. *Cor.* 0. *Fruit* 1-seeded, included in the enlarged and hardened *involucre*. *Juss.* — Named from ξανθος, *yellow* or *fair;* because an infusion of this plant was supposed to improve the colour of the hair.

1. X. **strumárium* L. (*broad-leaved B.*); stem unarmed, leaves cordate angulato-dentate with 3 principal nerves at the base, fruit downy its beaks straight the prickles hooked. *E. B.* t. 2544.

Rare, in waste ground in the S. of England, and Kerry, Ireland. ☉. 8, 9. — A rank, weed-like plant, remarkable for the curious structure of its *flowers*, and the prickly *involucres* which surround the *fertile* ones, enlarging and becoming part of the *fruit*. It is scarcely naturalised, and rarely ripens seed in the S. of England.

Ord. XLVII. CAMPANULACEÆ *Juss.*

Calyx-tube adnate with the *ovary*, mostly 5-lobed, lobes persistent. *Corolla* regular or irregular, mostly 5-lobed, marcescent; æstivation valvular. *Stamens* free from the corolla and equal in number with its segments, free or more or less combined. *Anthers* 2-celled, distinct or rarely cohering, opening longitudinally. *Ovary* with two or more polyspermous cells. *Style* 1, pubescent on the upper half. *Stigma* simple or lobed, naked (not surrounded by a circle of hairs). *Fruit* dry, opening between the dissepiments. *Seeds* fixed to the axis. *Albumen* fleshy: *embryo* straight. — Herbaceous *or* suffruticose.

[1] Tab. VII. represents, at fig. 1., a flowering specimen of *Xanthium strumarium;* the upper clusters or heads consist of barren, the lower of fertile, flowers.
Fig. 2. Scale of the involucre with a barren flower, exhibiting the corolla and the staminal tube with five anthers.
Fig. 3. Fertile flower; consisting of a prickly monophyllous involucre with 2 beaks, and the branches of the styles protruded beyond the beaks.
Fig. 4. The same cut open to show the two pistils or flowers without calyx or corolla.
Fig. 5. Fruit, enveloped by the persistent involucre (natural size).
Fig. 6. Single fruit.
Fig. 7. Seed.
Fig. 8. Embryo.
Fig. 9. The same, one cotyledon being removed.
Fig. 10. The same, cut vertically through the two cotyledons.

Leaves *mostly alternate, without stipules. Flowers generally blue or white.* Lactescent and bitter.

1. Campanula. Cor. campanulate or sub-rotate; segments broad and shallow.
2. Phyteuma. Cor. rotate; segments long, linear. Anthers distinct.
3. Jasione. Cor. rotate; segments long, linear. Anthers cohering at their base.

1. Campánula *Linn.* Bell-flower.

Cor. campanulate or subrotate, with 5 broad and shallow segments. *Filaments* more or less dilated at the base; *anthers* distinct. *Stigma* 2—5-fid. *Caps.* 2—5-celled, bursting laterally, rarely at the extremity. — Name: *campanula*, a *little bell*, from the usual form of the corolla.

* *Corolla campanulate. Capsule turbinate, 3—5-celled, opening by lateral clefts below the calyx-segments. Stigma 3—5 cleft.*

1. C. *pátula* L. (*spreading B.*); stem angular scabrous, leaves roughish dentato-crenate those of the root obovate-lanceolate subpetiolate those of the stem linear-lanceolate, panicles spreading, flowers long-stalked erect, cal.-segments subulate toothed at the base, corolla spreading, capsule erect with the clefts close to the cal.-segments. *E. B.* t. 42.

Pastures and hedges, chiefly confined to the middle and south-eastern counties of England, and even there by no means frequent. ☉. (♂. *Sm.*) 7—9. — Somewhat allied to *C. rotundifolia*, but much taller, with more branched *panicles*; larger, more spreading and more purple *flowers*; rough *stems* and *leaves*, and toothed or serrated *calycine segments*.

2. C. **Rapúnculus* L. (*Rampion B.*); stem somewhat angular hairy below, leaves roughish those of the root obovate-oblong stalked crenate upper ones narrow-lanceolate, panicle erect racemose, cal.-segments subulate entire, limb of the corolla patent, capsule erect with the clefts close to the cal.-segments. *E. B.* t. 283.

In Kent, Surrey, and Norfolk, in a gravelly soil; and in several of the midland counties as far north as Yorkshire. ♃. 7, 8. — Taller (2—3 feet high), more erect, and less panicled than the last. *Flowers* almost racemed, little spreading at the mouth, more truly campanulate. *Calycine segments* narrow and entire. The Hampshire station, often referred to, yields only *C. patula*.

3. C. **persicifólia* L. (*Peach-leaved B.*); glabrous, stem rounded few-flowered, root-leaves obovate stalked crenate those of the stem linear lanceolate subserrate sessile, raceme few-flowered, calycine segments lanceolate entire, corollas spreading, capsule erect with the clefts close to the cal.-segments. *E. B. S.* t. 2773.

Woods near Cullen, Scotland. 4. 7. — *Corolla* large, spreading. In wild specimens, the *flowers* are often solitary upon the stem.

4. C. *rotundifólia* L. (*round-leaved B.* or *Hairbell*); glabrous, root-leaves subrotundo-cordate crenate (very soon withering) lower cauline ones lanceolate, upper linear entire, flowers solitary or racemose drooping, calyx-segments subulate, capsule drooping with the clefts at the base. *E. B.* t. 866.

Dry and hilly pastures, borders of fields, walls, &c., abundant, sometimes varying with white flowers. 4. 7—9. — *Panicle* few-flowered, lax. *Flowers* drooping. Whole plant slender and graceful.

5. C. *latifólia* (*Giant B.*); stem quite simple rounded, leaves ovate-lanceolate acute scabrous doubly serrate lower ones stalked, flowers racemose, peduncles erect single-flowered, calyx glabrous its segments lanceolate acuminate minutely serrate, fruit drooping opening by clefts at the base. *E. B.* t. 302.

Moist shady woods. In Norfolk, Suffolk, Bedfordshire, and Derbyshire, but rare; less unfrequent in the north of England, and very common in woody glens in Scotland. New-Ross, Ireland. ☉. 7, 8. — *Stem* 2—3 ft. high. *Corolla* very large, blue, often white in the Scottish woods. This is the finest and most stately of our species.

6. C. **rapunculoídes* L. (*creeping B.*); stem slightly branched, leaves scabrous unequally crenate-serrate, lower ones cordate long-stalked, upper lanceolate sessile, flowers solitary unilateral drooping axillary forming a leafy raceme, segments of the calyx at length reflexed, capsule drooping with the clefts at the base. *E. B.* t. 1360.

Woods and fields, rare. Oxfordshire. On the magnesian limestone between Went-bridge and Darlington, Yorkshire. Blair in Athol, Scotland; and in corn-fields 2 miles N. W. of Kirkcaldy, 4. 7, 8. — *Root* creeping. *Stem* 2 ft. high. *Leaves* gradually narrower in the upper part of the stem. *Flowers* large. *Cal.-segments* linear-lanceolate, entire, rough.

7. C. *Trachélium* L. (*Nettle-leaved B.*); hispid, stem angular, leaves coarsely double-serrate, lower ones cordate long-stalked, upper nearly sessile lanceolate acuminate, peduncles axillary few-flowered, calyx-segments lanceolate erect, capsule drooping with the clefts at the base. *E. B.* t. 12.

Woods in England, frequent. 4. 7—9. — *Leaves* much like those of the Nettle, whence its English name. *Flowers* occasionally white in Hampshire.

8. C. *glomeráta* L. (*clustered B.*); stem angular simple nearly smooth, leaves scabrous crenate oblong-lanceolate, root-leaves petiolate those of the stem semiamplexicaul, flowers sessile mostly in a terminal cluster, capsule erect with the clefts at the base. *E. B.* t. 90.

In dry, principally chalky and clayey, pastures, England. Hilly

pastures in Scotland; but confined chiefly to the east side, between the Frith of Forth and Montrose. ♃. 7, 8.—Varying much in height, from 3 or 4 inches to a foot. *Flowers* rather large, erect. Many slight varieties of this plant are considered to be species by the Continental botanists.

** *Cor. companulate. Capsule somewhat globose, partly superior, the free portion opening by 3—5 valves.* Wahlenbergia.

9. C. *hederácea* L. (*Ivy-leaved B.*); stem weak filiform, leaves all stalked cordate angularly 5-lobed glabrous, peduncles solitary. *E. B.* t. 73. Wahlenbergia *Reich.*

In moist shady woods, in the south of England, and the west of Scotland; Wales, and Ireland. ♃. 7, 8.—A most graceful little plant, growing in lax tufts like *Sibthorpia Europæa. Peduncles* long, slender, mostly terminal. *Flowers* half an inch or more in length, at first drooping then erect, pale purplish-blue. *Fruit* an almost globose *capsule*, three-fourths adhering to the *calyx*, opening, not at the sides, but in the upper free part, between the persistent segments of the calyx.

*** *Corolla nearly rotate. Capsule prismatical, elongated opening by lateral clefts between the cal.-segments.* Specularia.

10. C. *hýbrida* L. (*Corn B.*); stem simple or often branched from the base, leaves oblong crenate waved, corolla widely spreading shorter than the calyx-segments, capsule triangular. *E. B.* t. 375. Specularia *Alph.: DC.*

Corn-fields of a dry and chalky nature, chiefly confined to the middle and southern parts of England. Near Guillon, E. Lothian; Fifeshire. ☉. 6—9.

2. Phyteúma *Linn.* Rampion.

Cor. rotate, in 5 deep linear segments. *Filaments* dilated at the base; *anthers* distinct. *Stigma* 2—3-cleft. *Caps.* of 2—3 cells, bursting at the side. (*Flowers in dense bracteated spikes or heads.*)—Name: φυτευμα (the same as φυτον), the *plant*; given *par excellence* to some medicinal plant by the ancients, but which probably bore little or no resemblance to the present.

1. P. *orbiculáre* L. (*round-headed R.*); head of flowers globose, of fruit oval, radical leaves cordate-ovate petiolate crenate lower cauline ones ovate-oblong, upper as well as the bracteas lanceolate, stigmas 3. *E. B.* t. 142.

Chalky soils, to the south of London; but rare. On the downs of Sussex and Hampshire; in Surrey and Kent. ♃. 7, 8.—*Stem* 1 foot high. *Root-leaves* numerous, but often withering while the stem is yet in perfection, as is the case with those of *Campanula rotundifolia: cauline* ones remote, gradually becoming smaller upwards. *Heads of flowers* of a most beautiful blue colour. The

capsules too form a curious oval *head*, with the persistent calyces, each *calyx* spreading in a stellate manner.

2. P. *spicátum* L. (*spiked R.*); head of flowers oblong, of fruit elongated cylindrical, radical leaves cordate-oblong petiolate somewhat doubly serrate, upper ones linear-lanceolate sessile, bracteas linear, stigmas 2. *Borrer in E. B. S.* t. 2598.

Woods, thickets, hedges, and fields recently cleared of woods in several stations about Mayfield and Waldron, Sussex. Warbleton. ♃. 6, 7. — Formerly cultivated, and the *root* eaten as a salad or boiled. Is our plant not an escape from gardens? Much taller than the last species. *Spike* of *flowers* 2—4 inches long greenish-white. Upper part of the *stem* almost bare of *leaves*.

3. Jasióne *Linn.* Sheep's-bit.

Cor. rotate, in 5 deep narrow segments. *Anthers* united at their base. *Stigma* club-shaped. *Caps.* 2-celled, opening at the top by minute teeth. (*Flowers collected into a head, within a many-leaved involucre.*) — Name: ιασιωνη, some plant used in medicine, supposed by some to be a *Convolvulus*, from ιαομαι, ιασομαι, to *heal*.

1. J. *montána* L. (*annual S.*, or *Scabious*); leaves linear waved hispid, peduncles solitary elongated, root annual or biennial. *E. B.* t. 882.

Dry heathy pastures, in a light gravelly or heathy soil. ☉ or ♂. 6—9. — *Stem* 6—10 inches high, branched. *Flowers* bright blue, in terminal, dense, hemispherical *heads*. *Cal.* small, superior, 5-toothed.

Ord. XLVIII. LOBELIACEÆ *Juss.*

Calyx-tube cohering more or less with the ovary, 5-lobed, lobes persistent. *Corolla* mostly irregular, 5-lobed; æstivation somewhat valvular. *Stamens* 5, free from the corolla: *anthers* cohering, 2-celled, usually dissimilar, the two lower ones mucronate or bearded, three upper naked or bearded. *Ovary* 1—2-celled. *Style* 1, glabrous, with a ring of hairs below the bifid or simple *stigma*. *Fruit* dry, more or less inferior, the free part usually opening between the dissepiments at the apex by 2 valves, or rarely baccate. *Albumen* fleshy: *embryo* straight. — Herbaceous *or* suffruticose. Leaves *alternate*, *without* stipules. — Lactescent and bitter. The genus *Tupa*, and particularly *T. Feuilliei* from Chile, is poisonous.

Lobélia *Linn.* Lobelia.

Cor. irregular, 2-lipped, cleft longitudinally on the upper side; upper lip smaller and erect, lower spreading 3-cleft. *Anthers* united, two lower ones bearded at the apex. *Capsule*

2—3-celled, the upper part free 2-valved, loculicidal. — Named in honour of *Matthias Lobel* or *L'Obel*, a Fleming, who settled in England, where he published several learned botanical works.

1. L. *úrens* L. (*acrid L.*); leaves toothed nearly glabrous, radical ones obovate petioled, upper ones lanceolate sessile, raceme terminal bracteate, calyx rough. *E. B.* t. 953.

Heathy ground, very rare, near Axminster; Ashford, Kent; Devonshire? 4. 8, 9. — Milky, and, as its name implies, highly acrid. One foot or more high, with distant *leaves* and axillary branches. *Flowers* deep-purple, slightly downy externally.

2. L. *Dortmánna* L. (*Water L.*); leaves radical subcylindrical and obtuse of two parallel tubes, stem scarcely leafy, flowers racemed. *E. B.* t. 140.

Lakes in the north and north-west of England, Scotland, and Ireland, especially in the mountainous parts, frequent; often forming a green carpet at the bottom of the water with its densely matted foliage. 4. 7, 8. — *Root* a small, thick, fleshy stock, from which descend many fibres, and sending forth creeping filiform runners. *Leaves* 2—3 inches long, a little recurved, formed of two parallel tubes or cells. *Scapes*, or almost *leafless stem*, a foot or more high, according to the depth of the water. *Flowers* pale blue, drooping; *fruit* erect.

Ord. XLIX. VACCINIACEÆ *De Cand.*

Calyx-tube adnate with the *ovary;* the *limb* with from 4—5 more or less distinct lobes or teeth. *Corolla* lobed as the calyx. *Stamens* distinct, free from the corolla, and double the number of its lobes, inserted beneath an epigynous disk. *Anthers* with two cells, opening by 2 pores, and often furnished with 2 awns. *Ovary* 4—5-celled, 1- or many-seeded. *Style* and *stigma* simple. *Berry* with minute *seeds*. *Albumen* fleshy. — Shrubs; with *alternate often coriaceous* leaves; *chiefly inhabiting mountainous situations or high northern latitudes, slightly tonic and astringent; the* fruit *esculent.*

1. Vaccínium *Linn.* Whortleberry.

Cor. ovate, campanulate or rotate, 4—5-fid. *Berry* globose, 4-celled, many-seeded. — Name: some say the ὑακινθος of the Greeks, and hence synonymous with *Hyacinthus*, but more probably altered from *baccinia*, denoting a plant with abundance of *baccæ* or *berries.*

* *Cor. ovate or campanulate.*

† *Leaves deciduous. Anthers with 2 dorsal awns.*

1. V. *Myrtillus* L. (*Bilberry* or *Whortleberry*); peduncles

1-flowered, leaves ovate-serrate glabrous deciduous, stem angular. *E. B.* t. 456.

Woods and heathy places, chiefly in mountainous or alpine districts, abundant. ♄. 4—6.— A small *shrub*, about 1 foot high. *Flowers* drooping, urceolate, almost waxy, greenish with a red tinge. *Anthers* tubular, each cell opening by a pore at the extremity, and having a horn at the back. *Berries* black, glaucous, very agreeable to the taste, and much eaten in the Highlands of Scotland.

2. V. *uliginósum* L. (*great Bilberry* or *Bog Whortleberry*); peduncles 1-flowered, leaves obovate entire glaucous veined beneath deciduous, stems rounded. *E. B.* t. 581.

In mountain bogs, Cumberland and Westmorland; more frequent in the Highlands of Scotland, ascending even nearly to the summits of the mountains. ♄. 5, 6.— *Leaves* glaucous, especially beneath. *Cor.* ovate, flesh-coloured, smaller than in the last; *anthers* similar. *Berries* black, agreeable, but inferior in flavour to those of *V. Myrtillus.*

†† *Leaves persistent, evergreen. Anthers awnless at the back.*

3. V. *Vitis Idæ'a* L. (*Red W., Cow-berry*); racemes terminal drooping, flowers campanulate 4-cleft, leaves evergreen obovate dotted beneath, their margins slightly revolute nearly entire. *E. B.* t. 598.

Dry places on heaths, mountains and in woods in the north of England, Wales, Scotland, and Ireland. ♄. 5, 6.— A low, somewhat straggling *shrub*, with leaves resembling those of the *Box*. *Flowers* pale flesh-coloured, open at the mouth, and with deeper and more spreading segments than the two preceding species.

* *Cor. rotate with reflexed segments. Leaves persistent, evergreen. Anthers awnless at the back.*

4. V. *Oxycóccos* L. (*Marsh W., Cranberry*); peduncles terminal single-flowered, leaves ovate evergreen glaucous beneath, their margins revolute and entire, cor. 4-partite revolute, stem filiform. *E. B.* t. 319. Oxycoccos palustris *Rich.*

Peat bogs, especially among *Sphagnum*, in various parts of England, Scotland, and Ireland. *Flowers* of a bright rose-colour. *Cor.* deeply divided, the segments singularly revolute, on which account this species has been by some botanists removed from *Vaccinium.* The fruit is highly agreeable, making the best of tarts.

[*V. macrocarpum* Ait. is found in Loughton Bog, Mould, Flintshire; but it must have been planted there, as it is entirely a N. American species.]

Sub-Class III. COROLLIFLORÆ. (Ord. L.—LXVIII.)

Corolla monopetalous, hypogynous (inserted upon the receptacle, at the base of the ovary, which is thus free, not adnate with the calyx.)

Conspectus of the Orders.

A. *Stamens free from the corolla, distinct.*

[36. Crassulaceæ. Styles several. Ovary of distinct pieces or carpels.]
50. Ericaceæ. Style 1. Cor. petaloid: petals firmly cohering. Stam. 8—10. Seed-coat close to the nucleus. Plants shrubby.
51. Pyrolaceæ. Style 1. Cor. petaloid: petals very slightly cohering at the base, easily separated. Stam 10. Seed-coat chaffy. Plants herbaceous.
68. Plantaginaceæ. Style 1. Cor. membranaceous. Stamens 4. (Flowers monœcious.)

B. *Stamens inserted upon the corolla, distinct.*

* *Style basilar. Ovary 4-partite. Albumen 0, or in small quantity.*

59. Boraginaceæ. Flowers usually regular. Stamens 5. Leaves alternate.
63. Labiatæ. Flowers usually irregular. Stamens 2—4. Leaves opposite.

** *Cor. scariose. Style terminal. Ovary entire.*

68. Plantaginaceæ. Cor. tubular; limb equal, 4-partite. Stamens 4 very long.

*** *Cor. coloured (petaloid). Style terminal. Ovary entire, 1-celled.*

67. Plumbaginaceæ. Calyx tubular. Styles 5. Ovule solitary.
[33. Portulacaceæ. Sepals 2, distinct. Styles 3. Ovules 3.]
66. Primulaceæ. Cor. regular. Stamens opposite the lobes of the cor. and as many, equal. Style 1.
65. Lentibulariaceæ. Cor. irregular. Stam. 2. Style 1. Ovary with a free central placenta.
62. Scrophulariaceæ. Cor. nearly regular. Stam. 4, fewer than the lobes of the cor., and alternating. Style 1. Placentas axile.
61. Orobanchaceæ. Cor. irregular. Stam. 4, didynamous. Style 1. Placentas parietal.
56. Gentianaceæ. Cor. regular. Stam. alternate with the lobes of the cor., and as many. Style 1—2. Placentas parietal. Seeds very numerous.
58. Convolvulaceæ. Cor. regular. Stam. alternate with the lobes of the cor., and as many. Style 1. Placentas basilar. Seeds very few.

**** *Cor. coloured. Stam. distinct. Style terminal. Ovary entire or slightly 2-lobed, with two or more cells.*

† *Ovules solitary in each cell, or in pairs and collateral.*

58. Convolvulaceæ. Cor. regular, 4—5-lobed. Stam. 4—5. Style or styles evident. Leaves alternate or none.

53. AQUIFOLIACEÆ. Cor. regular, 4—6-partite. Stam. 4—6. Stigmas sessile.
54. OLEACEÆ. Cor. regular, valvate in æstivation. Stam. 2. Leaves opposite.
64. VERBENACEÆ. Cor slightly irregular, with a cylindrical tube and 5-cleft limb, imbricated in æstivation. Stam. 4. Leaves opposite.

†† *Ovules in pairs in each cell and superposed, or more than* 2.

57. POLEMONIACEÆ. Cor. regular. Stigmas 3. Ovary and capsule 3-celled.
55. APOCYNACEÆ. Cor. regular, twisted in æstivation. Stam. as many as the lobes of the cor. Style with a ring below the stigma. Stigma 1. Fruit of 2 follicles.
56. GENTIANACEÆ. Cor. regular, twisted in æstivation. Stam. as many as the lobes of the cor. Style without a ring below the stigma. Stigmas 1—2. Fruit imperfectly 2-celled, not follicular. Leaves opposite.
60. SOLANACEÆ. Cor. with 5 lobes and stamens. Fruit 2- (or spuriously 4-) celled. Seeds more or less peritropal. Embryo heterotropal. Leaves alternate. Flowers usually extra-axillary.
62. SCROPHULARIACEÆ. Stamens usually fewer than the lobes of the cor. Fruit 2-celled. Seeds ascending. Embryo homotropal.

[C. *Stamens inserted upon the corolla*, 8, *diadelphous.*

11. POLYGALACEÆ. Cor. irregular, coloured. Style 1, terminal. Ovules solitary in each cell.]

A. *STAMENS FREE FROM THE COROLLA.* (ORD. L.—LII.)

ORD. L. ERICACEÆ.

Calyx of 4 or 5 divisions, persistent. *Corolla* of 4 or 5 divisions, regular or irregular almost hypogynous, marcescent or deciduous. *Stam.* 8—10. *Anthers* 2-celled, the cells separating at the apex or the base, opening by pores or rarely by a longitudinal fissure, often appendaged. *Ovary* seated upon an hypogynous disk, with 4 or more cells. *Style* 1. *Stigma* 1, often lobed. *Fruit* a capsule, many-celled, with an axile *placenta*, many-seeded. *Seeds* with the outer coat of the same form as and close-pressed to the nucleus, very rarely chaffy. *Albumen* fleshy. — Shrubs *with opposite or whorled, mostly evergreen and rigid leaves, without stipules.* — Many are astringent and diuretic, some poisonous, as *Rhododendron* and *Kalmia.*

* *Corolla marcescent. Fruit dry, capsular.*

1. ERICA. Calyx simple. Capsule loculicidal, dissepiments adhering to the valves.
2. CALLUNA. Calyx double (surrounded by 4 coloured bracteas similar to the calyx). Caps. septicidal, dissepiments detached from the valves.

** *Corolla deciduous. Fruit dry, capsular.*

3. MENZIESIA. Cor. ventricose. Stam 8—10. Caps. 4—5-celled, septicidal; valves entire.
4. AZALEA. Corolla campanulate. Stam. 5. Caps. 2—3-celled, septicidal; valves bifid.
5. ANDROMEDA. Cor. ovate or campanulate. Stam. 10. Caps. loculicidal.

*** *Cor. deciduous. Fruit fleshy, indehiscent.*

6. ARBUTUS. Cells of berry many-seeded.
7. ARCTOSTAPHYLOS. Cells of berry 1-seeded.

1. ERÍCA *Linn.* Heath.

Cal. of 4 leaves. *Cor.* campanulate or ovate, often ventricose, marcescent. *Capsule* 4-celled, 4-valved, loculicidal, dissepiments adhering to the middle of the valves. — Named from ερεικω, to *break*, because it was formerly supposed to have the power of destroying calculi in the bladder.

* *Mouth of the corolla oblique. Anthers included, or nearly so.*

1. E. *ciliáris* L. (*ciliated H.*); anthers without awns bifid included, corolla ovate inflated, leaves ovate 4 in a whorl ciliato-glandulose, flowers in terminal unilateral racemes, ovary glabrous. *E. B. S.* t. 2618.

Near Truro and Penryn, frequent, and on the north coast of Cornwall; near Corfe Castle, Dorset; near Clifton, Galway, Ireland. ♄. 6, 7. — The *flowers* are as large as those of *Menziesia cærulea*, and more highly coloured; while the *leaves* are elegantly fringed with hairs, and each hair is tipped with a gland. Growing along with this and *E. Tetralix*, Mr. H. Watson finds at Truro a hybrid between them, having sometimes the *cor.* and the *racemes* of the present species, with the leaves, pubescent ovary, and awned anthers of the next, but varying in these respects.

** *Mouth of corolla straight. Anthers included, or nearly so, awned at the base.*

2. E. *Tétralix* L. (*Cross-leaved H.*); anthers with two acute awns at the base included, corolla ovate long as the style, leaves 4 in a whorl linear revolute at the margin ciliated, flowers umbellate-capitate, pedicels hoary, ovary pubescent. *E. B.* t. 1014.

Heaths and moory ground, abundant. ♄. 7, 8. — *Flowers* rose-coloured, sometimes white, drooping. They have been found cleft into several divisions, and with the stamens turned into petaloid segments. The species varies much as to the number of ciliæ on the leaves and calyx, and occasionally loses them entirely.

3. E. *Mackáyi* Hook. (*Mackay's H.*); anthers with 2 acute awns at the base included, corolla ovate a little shorter than the style, leaves 4 in a whorl ovate ciliated glabrous above

almost white beneath, flowers umbellate-capitate, pedicels nearly glabrous, ovary glabrous. *E. B. S.* t. 2900.

Between Roundstone and Clifden, Cunnamara, Ireland. ♄. 8, 9. —This was first found in Ireland by Mr. Wm. MacCalla and Mr. Ogilby, and distinguished by Dr. Mackay, and in the same year it was discovered on the Sierra del Peral, in Asturia, by M. Durieu. The broad, almost exactly ovate, leaves, with a great proportion of nearly white surface beneath, would seem, at first sight, to distinguish this specifically from the preceding; to which may be added, according to Mr. Babington, that the upper surface of the leaves and their midrib beneath are always glabrous, while these parts are downy in *E. Tetralix.* Perhaps however it may prove, by cultivation, to be only a more glabrous form, with larger foliage.

4. E. *cinérea* L. (*fine-leaved H.*); anthers with two serrated appendages at the base included, style a little exserted, corolla ovate, leaves ternate linear keeled acute glabrous shining, flowers in dense whorled racemes, ovary glabrous. *E. B.* t. 1015.

Heaths, abundant. ♄. 7—9.—*Flowers* drooping, reddish-purple. *Leaves* usually with fascicles of small leaves in their axils. The plant is used for various economical purposes: its flowers are sometimes white.

**** Mouth of the corolla straight. Anthers protruded, bipartite, awnless.*

5. E. *vágans* L. (*Cornish H.*); anthers without awns deeply bifid and as well as the style exserted, corolla campanulate, leaves 3—4 in a whorl, flowers axillary crowded, ovary glabrous. *E. B.* t. 3. E. multiflora *Huds.* (not *L.*)

On heaths in Cornwall, abundant. Islet on the coast of Waterford, near Tramore, Ireland. ♄. 7, 8. — Well distinguished from all our British *Ericæ* by its campanulate, not ovate, *corolla.*

6. E. *Mediterránea* L. (*Mediterranean H.*); anthers without awns deeply bifid and as well as the style exserted, corolla narrow urceolate, bracteas above the middle of the peduncle, calyx coloured, flowers in leafy racemes, leaves 4 in a whorl linear glabrous flat above convex with a central furrow beneath, ovary glabrous.—β. *Hibernica*, flowering-branches and style shorter. *Hook. in E. B. S.* t. 2774.

β. Mountain-bogs in the west of Mayo and Galway, Ireland. On Urrisbeg Mountain, Cunnamara; Curraan, Achil; Burrishoole Lake, &c. ♄. 4.—The Irish plant seems intermediate between the *E. Mediterranea* of Bot. Mag. and *E. carnea:* the stem is sometimes 2—5 ft. high, with numerous upright rigid branches, as in *E. Mediterranea*, sometimes only 4—8 inches high with spreading branches. Mr. Bentham, indeed, unites them all under *E. carnea.*

2. Callúna *Salisb.* Ling.

Cal. of 4 coloured leaves, concealing the *cor.*, accompanied by 4 *bracteas*, resembling an outer calyx. *Cor.* campanulate, marcescent. *Stam.* 8. *Caps.* 4-celled, 4-valved, septicidal and septifragal (*valves* opening at the dissepiments which separate from them and adhere to the axis of the fruit). — Named from καλλυνω, to *cleanse* or *adorn*, and hence peculiarly applicable, as Sir J. E. Smith observes, to this plant, whether we consider the beauty of its flowers, or the circumstance of brooms being made of its twigs.

1. C. *vulgáris* Salisb. (*common L.*). Erica *L.*: *E. B.* t. 1013.

Heaths and moors, common; sometimes with white fl. ♄. 6—8. — A low, much-branching, tufted *shrub*. *Leaves* small, opposite, with two small decurrent spurs at the base, more or less pubescent, and even hairy in β. of *Sm.* (the *E. ciliaris* Huds. not Linn.), closely imbricated in 4 rows. *Flowers* small, reddish, drooping, nearly sessile, ovate. A plant much employed for brooms and for fuel. It makes excellent edging to garden-plots, and bears clipping as well as *Box*.

3. Menziésia *Sm.* Menziesia.[1]

Cal. cleft to the base into 4—5 deep segments, or 4-lobed. *Cor.* ventricose, deciduous. *Stam.* 8—10. *Capsule* 4—5-celled, septicidal (the dissepiments formed by the inflexed margins of the entire valves, and opening between these dissepiments). — Name: "Nomen dedi," says the learned founder of this genus, "in honorem *Archibaldi Menzies* Scotici, peregrinatoris et botanici indefessi, priscæ fidei ac urbanitatis viri."

1. M. *cærúlea* Sm. (*Scottish M.*); leaves scattered numerous linear toothed, flower-stalks terminal aggregate simple, flowers 5-cleft decandrous. *E. B.* t. 2469. Phyllodoce taxifolia *Sal.*

Heathy moor on the "Sow of Athol," at Dalnaspidal, Perthshire. ♄. 6, 7. — A small *shrub*; *stems* branched, woody and naked below. *Peduncles* 2 inches long, glandular, reddish. *Flowers* large, beautiful, purple-blue. *Cor.* urceolate. — This plant is far more common in North America than in Scotland. It scarcely yields in beauty to the following species.

2. M. *polifólia* Juss. (*Irish M.*, or *St. Dabeoc's Heath*); leaves ovate the margins revolute white and downy beneath, flowers

[1] This genus is by some divided into three:—1. *Phyllodoce* Sal. Cal. deeply 5-cleft. Filaments longer than the anthers. Stigma peltate, with 5 tubercles. Seeds oblong compressed. — 2. *Dabeocia* Don. Cal. deeply 4-cleft. Filaments shorter than the anthers. Stigma truncate. Seeds ovate.—3. *Menziesia* Sm. Calyx 4-lobed. Filaments longer than the anthers. Stigma obtuse. Seeds scobiform. The two first are evergreen: the last has deciduous leaves, and is a native only of America; it is no doubt the original species of the genus, but Smith afterwards changed the character so as to exclude it, and include the European ones.

4-cleft octandrous in terminal leafy racemes. Erica Dabeoci *L.: E. B.* t. 35. Dabeocia polifolia *Don.*

Mountainous heaths in Ireland. Croagh Patrick, county Mayo. Abundant in Cunnamara. Sometimes with pure white fl. ♄. 6—8.

4. AZÁLEA *Linn.* Azalea.

Cal. 5-partite. *Cor.* shortly campanulate, regular, deciduous. *Stam.* 5, straight, inserted at the base of the *cor.* *Anthers* bursting longitudinally. *Caps.* 2—3-valved, 2—3-celled; dissepiment formed by the inflexed margins of the bifid valves. *Seeds* attached to a central, at length free, receptacle. — Named from *αζαλεος*, *parched, arid;* because in such places the plant grows.

1. A. *procúmbens* L. (*trailing Azalea*). *E. B.* t. 865. Chamæledon *Link.* Loiseleuria *Desvaux.*

Dry moory ground, on most of the Scottish Highland mountains, among grass and moss; especially abundant in the north, and nowhere perhaps more plentiful than on the Cairngorm range, where it forms large dark green patches. ♄. 5, 6. — A low *shrub*, with very woody tortuous *stems*, and crowded leafy *branches*. This is the only species, among all those often placed in the genus, to which the name *Azalea* is applicable.

5. ANDRÓMEDA *Linn.* Andromeda.

Cal. deeply 5-cleft. *Cor.* ovate or campanulate, deciduous. *Stam.* 10. *Anthers* with awns. *Caps.* superior, 4—5-celled, loculicidal, the dissepiments from the middle of the valves. — Named in allusion to the fable of *Andromeda*, who was chained to a rock, and exposed to the attack of a sea-monster; so does this beautiful tribe of plants grow in dreary and northern wastes, feigned to be the abode of præternatural beings.

1. A. *polifólia* L. (*Marsh A.*); leaves alternate lanceolate their margins revolute glaucous beneath, flowers in short terminal racemes. *E. B.* t. 713.

Peat-bogs, Larlingford, Norfolk. The north of England, Lowlands of Scotland, and in the Queen's-county and Kerry, Ireland. ♄. 5—9. — A small evergreen *shrub*, with beautiful oval or urceolate, rose-coloured, drooping *flowers*, a good deal concealed among the terminal *leaves*.

6. A'RBUTUS *Linn.* Strawberry-tree.

Cal. deeply 5-cleft. *Cor.* ovate, deciduous. *Stam.* 10. *Fruit* fleshy, usually warted, 5-celled; cells many-seeded. — Named, according to Théis, from *ar*, *rough* or *austere*, and *boise*, a *bush*, in Celtic.

1. A. *Unédo* L. (*austere S.*); stem arboreous, leaves elliptic-

lanceolate serrate, panicles terminal, fruit tubercled. *E. B.* t. 2377.

About the Lakes of Killarney, in woods at Mucruss and at Glengariff near Bantry, Ireland, where it adds greatly to the charms of the scenery. ♄. 9, 10. — The fruit ripens the following summer. Apparently truly wild in the south of Ireland; though some are of opinion that it had been introduced by the Monks of Mucruss Abbey. The young *leaves* are clothed with glandular hairs. The *flowers* are large, pale greenish-white. *Fruit* red.

7. Arctostáphylos *Adans.* Bear-berry.

Cal. deeply 5-cleft. *Cor.* ovate, deciduous. *Stam* 10. *Fruit* fleshy, smooth, 5-celled; cells 1-seeded. — Name from αρκτος, a *bear*, and σταφυλη, a *grape*, in allusion to the common name of the fruit.

1. A. *alpina* Spreng. (*black B.*); stem procumbent, leaves wrinkled serrate marcescent, racemes terminal. Arbutus *L.*: *E. B.* t. 2030.

Dry barren grounds, on many of the Highland mountains. Ben Nevis, near the lake; and more frequent on the northern mountains and in Sutherland. Hoy hill, Orkney. ♄. 5. — A trailing *shrub*, with obovate, marcescent *leaves* which taper down into a footstalk, and assume, in autumn, a fine red colour. There are a few hairs on the leaf-stalks, and ciliated *bracteas* at the base of the flower-stalks. *Corollas* urceolate, very pale rose-colour, almost white. *Berry* black.

2. A. *Uva Ursi* Spreng. (*red B.*); stems procumbent, leaves obovate entire evergreen, racemes terminal. Arbutus *L.*: *E. B.* t. 714.

North of England and Ireland; especially abundant in the Highlands and Western Isles of Scotland, growing in dry heathy and rocky places. ♄. 5, 6. — *Stems* very strong and trailing; *leaves* obovate, stiff, rigid, glabrous, their margins revolute. *Flowers* in small crowded terminal *racemes*, of a beautiful rose-colour. *Berry* small, red, mealy, austere, yielding excellent food for the moor-fowl.

Ord. LI. PYROLACEÆ *Lindl.*

Calyx 5-partite, persistent. *Corolla* regular, deciduous. *Stamens* 10, placed in pairs opposite the petals: *anthers* 2-celled, inverted, opening by pores. *Ovary* without a conspicuous hypogynous disk, 5-celled, many-seeded. *Style* single. *Stigma* rayed or orbicular, generally lobed. *Capsule* 5-celled, 5-valved loculicidal. *Seeds* chaffy, numerous. *Albumen* fleshy, with the minute *embryo* at its base. — Herbaceous *or somewhat* shrubby. *Chimaphila* of North America is a powerful diuretic.

1. Moneses. Cor. 5-partite. Stigma 5-partite.
2. Pyrola. Petals 5. Stigma 5-lobed.

1. Monéses *Sal.* Moneses.

Petals slightly connected at the base. *Filaments* subulate; *anthers* with two tubular pores. *Stigma* 5-parted. Margins of the *valves* of the *capsule* without any web. — Name from μονος, *one*, or *alone*, on account of the solitary flowers, and combined petals.

1. M. *grandiflora* Sal. (*large-flowered M.*). Pyrola uniflora *L.: E. B.* t. 146.

Woods in Scotland, rare. Fir-wood near Brodie House, Forres. Woods at Scone. Coul, Ross-shire. In the Oak-wood, Knock of Alves, near Elgin. ♃. 7. — *Stem* scarcely any, bearing a few orbicular, petiolate and obscurely serrate *leaves*, and a single *peduncle*, with one large, nearly white, very fragrant *flower*. *Style* short, straight. *Stigma* large, with 5 erect rays.

2. Pýrola *Linn.* Winter-green.

Petals 5, distinct. *Filaments* subulate; *anther-cells* usually truncate and opening by a pore at the base, rarely with two tubular pores. *Stigma* 5-lobed. Margins of the *valves* of the *capsule* connected with a web. — Named from *Pyrus*, a *pear*; from a fancied resemblance in its flowers to those of a *Pear-tree*.

1. P. *secúnda* L. (*serrated W.*); flowers racemose all leaning one way, leaves ovate serrate. *E. B.* t. 517.

Rare in the north of England; near Keswick, Cumberland. Not unfrequent in fir-woods in Scotland, especially in the Highlands. ♃. 7. — *Stems* rather straggling, branched. *Peduncles* 4 – 5 inches high, with several oval scales or *bracteas*. *Flowers* small, greenish-white. *Petals* erect. *Style* much protruded. *Stigma* 5-lobed.

2. P. *rotundifólia* L. (*round-leaved W.*); flowers drooping racemose, leaves obovate-rotundate slightly crenate, style bent down curved upwards at the extremity, much longer than the ascending stamens. *E. B.* t. 213. — β. *bracteata*; leaves smaller, scape scaly throughout its whole length. P. maritima *Ken. in Phytol.* ii. p. 727.

Moist woods and bushy places, rare. Bradwell and Middleton, Suffolk; Larlingford, Norfolk; Hawthorndean and in Castle-Eden Dene, Durham; near Halnaby and Hackness, Yorkshire. Guernsey, among tall reeds near the sea. Gonnacha Wood, Glenclova, and Sidlaw Hills, Forfarshire; Auchindenny woods near Edinburgh. β. Sands on the Lancashire coast, *Mr. Kenyon*. ♃. 7—9. — The largest of the *Pyrolæ*, with white, spreading *flowers*: well distinguished by the direction and relative length of its *stamens* and *style*. The latter is more than twice as long as the fully formed *capsule*, and is singularly curved. *Stigma* with 5 erect points.

3. P. *média* Swartz (*intermediate W.*); leaves ovate-rotundate crenate, stamens erect much shorter than the straight or slightly decurved style, stigma with 5 erect points. *E. B.* t. 1945.

Woods, principally in the north; Keswick, Cumberland; Rugley wood, Northumberland; Durham; York; Worcestershire; St. Leonard's Forest, Sussex; also said to grow in Oxford, Bucks, Warwick, and Lancashire. Not very general in Scotland. County of Antrim, &c. Ireland. 4. 7, 8.—*Style* protruded beyond the *flower*, nearly straight.

4. P. *minor* L. (*lesser Winter-green*); leaves ovate-rotundate crenate, stamens erect as long as the very short straight style which is included within the flower, stigma large with 5 divergent rays. *E. B.* t. 158 (not good); *Hook. in Fl. Lond.* t. 154. P. rosea *E. B.* t. 2543.

Woods in the north of England and Scotland; frequent in the Western Highlands and Hebrides. 4. 6, 7.—Smaller than the last, essentially distinguished from it, and at once characterised by the shortness of its *style* and large radiated *stigma*, quite included within the concave *corolla*.

Ord. LII. MONOTROPACEÆ *Nutt.*

Cal. 5-partite or 5-sepaled, persistent. *Cor.* regular, gamopetalous, ovate or campanulate, or wanting. *Stamens* 8—10, sometimes alternating with as many recurved glands; *anthers* sometimes opening transversely, sometimes parallel-celled with bristles at the base, never opening by pores at the base or apex. *Ovary* without a conspicuous entire hypogynous disk, 4—5-celled, many-seeded. *Style* single. *Stigma* discoid, somewhat margined. *Capsule* 5-celled, 5-valved, loculicidal. *Seeds* numerous, chaffy or winged at one end. *Embryo* minute, in the apex of the fleshy *albumen*.—Herbaceous, *growing among the roots of Pines and other trees;* stems *brown or almost colourless, leafless, but covered with scales.*

1. Monótropa *Linn.* Bird's Nest.

Perianth (*corolla* DC.) of 4—5 leaves, cucullate at the base, with or without as many external alternating scales or *bracteas* (*calyx* DC.). *Anthers* 1-celled, 2-lipped. *Seeds* chaffy.—Named from μονος, *one*, and τρεπω to *turn;* the flowers all pointing one way.

1. M. *Hypópitys* L. (*yellow B.*); flowers racemose glabrous externally, lateral ones with 8 stamens, terminal one with 10, leaves of the perianth with as many glabrous alternating external scales. *E. B.* t. 69.—*α.* filaments, ovary, style, and inside of perianth glabrous.—*β.* filaments, ovary, style, and inside of perianth hairy.

Beech and fir woods, where the soil is dry; but not common either in England or Scotland. In Sussex, occurring in *rings* several feet in diameter. Counties of Dublin and Louth, Ireland. 4. 6, 7. — *Root* parasitic? *Stem* stout, erect, 6—9 inches high, simple or slightly branched, instead of *leaves* having numerous ovate scattered *scales*, of the same dingy yellow hue as the stem. *Raceme* terminal, a continuation of the stem, at first drooping, then erect. *Flowers* on short scaly or bracteated *pedicels*, large, of the same colour as the rest of the plant. *Stamens* alternately smaller. *Seeds* very minute, rarely perfect; the outer coat loose, reticulated, and much longer than the nucleus.

B. *Stamens inserted upon the Corolla.* (Ord. LIII.—LXVIII.)

Ord. LIII. AQUIFOLIACEÆ *De Cand.*

Cal. of 4—6 imbricated lobes. *Corolla* 4—6-lobed, æstivation imbricative. *Stamens* 4—6, alternate with the segments of the corolla. *Ovary* with from 2—6 or more cells. *Ovules* solitary, pendulous from a cup-shaped *seed-stalk*. *Stigmas* several or lobed, nearly sessile. *Fruit* fleshy, with from 2—6 or more stony 1-seeded *nuts*. *Albumen* fleshy. — Trees *or* shrubs. Leaves *coriaceous*. Flowers *small*, *axillary*. — The Bark and Fruit are tonic and astringent. The famous *Paraguay Tea* of South America is a species of *Holly*, *Ilex Paraguensis*.

1. Ilex *Linn.* Holly.

Cal. 4—5-toothed. *Cor.* rotate, 4—5-cleft. *Stigmas* 4, sessile. *Fruit* spherical, including 4 *nuts*. (Some flowers destitute of pistil.) — Name supposed to be the same as *Ulex*, which see; or perhaps a corruption of *Illex*, *enticing* or *alluring*, in allusion either to the birdlime made of the bark, or to the fruit.

1. I. *Aquifólium* L. (*common H.*); leaves ovate acute shining, waved with spinous teeth, peduncles axillary short many-flowered, flowers subumbellate. *E. B.* t. 496.

Frequent in hedges and woods, especially in a light or gravelly soil. ♄. 5, 6. — A small evergreen *tree* of great beauty, with smooth greyish *bark*. *Leaves* alternate, deep shining green, very rigid, the upper ones quite entire, the lower ones generally edged with strong sharp spines, a difference in the foliage which has not escaped the notice of poets. *Fruit* bright scarlet, sometimes yellow.

Ord. LIV. OLEACEÆ *R. Brown.*

Calyx divided, toothed, persistent, sometimes 0. *Corolla* 4-cleft, valvate in æstivation, occasionally 0. *Stamens* 2. *Ovary*

without any hypogynous disk, 2-celled, cells 2-seeded: *ovules* collateral, pendulous. *Style* 1, or 0: *stigmas* 1 or 2. *Fruit* a *berry*, *drupe*, or *capsule*, separable in two. *Seeds* with or without *albumen*. — Trees *or* shrubs. Leaves *opposite*, without stipules, *simple or compound*. — Olive oil is the expressed juice of the pericarp (not of the seed) of *Olea Europæa*. *Manna* is the concrete juice of *Fraxinus rotundifolia* and other species of *Ash*. The Jasmines yield a deliciously fragrant oil, and belong to the very closely allied order of *Jasminaceæ*, chiefly distinguished by the erect ovules, unsymmetrical flowers and corolla imbricated in æstivation.

1. Ligustrum. Fruit fleshy.
2. Fraxinus. Fruit dry, winged at the extremity.

1. Ligústrum *Linn.* Privet.

Cal. 4-cleft. *Cor.* 4-cleft. *Berry* 2-celled, with the cells 1—2-seeded. — Named from *ligo*, to *bind*; on account of the use sometimes made of its long and pliant branches.

1. L. *vulgáre* L. (*Privet*); leaves elliptic-lanceolate, panicle compact. *E. B.* t. 764.

Thickets, and more frequently in hedges, ♄. 6, 7. — A *bush*, with opposite evergreen *leaves*, frequently used for fences, as the plant bears clipping. *Flowers* small, white. *Berries* black, globose.

2. Fráxinus *Linn.* Ash.

Cal. 0, or 4-cleft. *Cor.* 0, or of 4 petals. *Fruit* dry, indehiscent, 2-celled, 2-seeded, compressed and foliaceous at the extremity (a *Samara*). *Seeds* solitary. (Flowers sometimes without stamens.) — Named from θραξις, a *separation*, in allusion to the facility with which the wood may be split.

1. F. *excélsior* L. (*common A.*); leaves pinnate, leaflets ovato-lanceolate acuminate serrate, flowers without either calyx or corolla. *E. B.* t. 1692. — β. *heterophylla* (*simple-leaved Ash*): leaves simple and pinnate. F. heterophylla *Vahl*: *E. B.* t. 2476.

Woods and hedges, throughout the country. — β. Rare in England; Devonshire. ♄. 4, 5. — One of the noblest of our trees, remarkable in old individuals for the curving upwards of the extremities of the lower pendant branches. The *F. heterophylla* may be considered a sort of monstrosity, often with the leaflets united so as to form one single leaf. — The *flowers* are very simple, and appear before the leaves. There is no *calyx* or *corolla*. The *pistil* and *stamens*, often one of each, are sometimes separate, and rise at once from the extremity of the flower-stalk.

Ord. LV. APOCYNACEÆ *Juss.*

Calyx of 5 persistent divisions. *Corolla* regular, 5-lobed, deciduous; *æstivation* twisted. *Stamens* 5. *Anthers* 2-celled. *Ovaries* 2, 1—2-celled, many-seeded. *Styles* 2—1. *Stigma* 1, capitate, contracted in the middle (like an hour-glass). *Fruit a follicle, capsule, drupe,* or *berry*. *Seed* albuminose.—Trees *or* shrubs, *often milky;* leaves *opposite, without stipules.*—An Order almost intermediate between *Gentianaceæ* and *Rubiaceæ*, containing acrid and powerful principles. The famous *Tanghin Poison* of Madagascar (see *Botanical Miscellany*, vol. iii. p. 110, and *Botanical Magazine*, tab. 2968) is the seed of *Tanghinia venenifera*. The root of the *Oleander* is poisonous, while the nearly allied *Tabernæmontana*, or *Hya-Hya* of British Guiana, is the milk-tree of that country, and yields a nutritive fluid like cream. *Urceola elastica* affords Caoutchouc. *Vinca minor* is bitter and astringent.

1. Vínca *Linn.* Periwinkle.

Cal. 5-partite. *Cor.* salver-shaped, the segments oblique. *Follicles* 2, erect. *Seeds* naked (destitute of seed-down).—Name: supposed from *vincio*, to *bind*, which the trailing stems do to those plants which grow in its neighbourhood.

1. V. *mínor* L. (*lesser P.*); stem procumbent, leaves oblong-lanceolate their margins as well as the small lanceolate teeth of the calyx glabrous. *E. B.* t. 917.

Hedges and banks in woods. Devon, Hants, and perhaps most of the southern counties. ♃. 4—6.—Wood of the shoots very tough; not so in the following species.

2. V. **májor* L. (*greater P.*); stem suberect, leaves ovate-cordate their margins as well as those of the elongated subulate segments of the calyx ciliated.—*E. B.* t. 514.

Woods and thickets. ♃. 4. 5.—Twice the size of the former in all its parts. *Corolla* usually purple in both, but varying in intensity. The *anthers*, *stigma*, and *fruit* (a *follicle*) of this genus are highly curious.

Ord. LVI. GENTIANACEÆ *Juss.*

Calyx divided, persistent. *Corolla* usually regular and persistent, the limb generally with an imbricative and twisted rarely with an induplicate æstivation, 4- mostly 5-, 6-, 8-, or 10-lobed. *Stamens* as many as lobes of the corolla. *Ovary* 1—2-celled, many-seeded. *Styles* 1 or 2. *Stigmas* 1—2. *Capsule* (or *Berry*) generally 2-valved; the margins of the valves turned inwards and bearing the *seeds*, where there is one cell; in the 2-celled genera the margins meet in the axis. *Albumen* fleshy.

— *Mostly* herbaceous, *generally glabrous* plants, *with opposite* (*rarely alternate*) *leaves and no stipules, eminently bitter and stomachic.*— *Gentiana lutea* is the *bitter Gentian*, and affords a spirit much used in Switzerland and well known under the name of *Gentian-Wasser: Swertia* (or *Ophelia*) *Chirayta* is a famous East-Indian stomachic.

A. *Leaves opposite. Corolla twisted in æstivation.*

* *Style deciduous.*

4. Chlora. Cor. rotate. Stamens 8.
1. Cicendia. Cor. funnel-shaped. Stam. 4. Anth. straight. Stigma 1, entire.
2. Erythræa. Cor. funnel-shaped. Stam. 5. Anth. twisted. Stigmas 2.

** *Style persistent.*

3. Gentiana. Cor. without nectariferous pores. Cal. 4—5 cleft.
3ª. Swertia. Cor. rotate, with nectariferous pores. Cal. 4—5-partite.

B. *Leaves alternate. Corolla induplicate in æstivation.*

5. Menyanthes. Cor. fleshy, hairy within. Caps. with 2 valves bearing the seeds along their middle. Leaves ternate.
6. Villarsia. Cor. thin, ciliated. Capsule without regular valves. Leaves floating, cordate.

A. *Segments of the corolla twisted in æstivation. Leaves opposite.* (Gen. 1—4.)

1. Cicéndia *Adans.* Gentianella.

Cal. 4-cleft. *Car.* 4-cleft, funnel-shaped, marcescent, the *tube* swelling. *Stam.* 4. *Anthers* opening longitudinally. *Style* 1, deciduous. *Stigma* entire. *Caps.* 1-celled, 2-valved. *Seeds* attached to 2 sutural receptacles, which at length separate with the opening of the 2-valved caps. — A name of Adanson's, the etymology of which is no where explained; perhaps derived from κικιννος, *curled hair*, on account of the slender entangled stems and branches.

1. C. *filiformis* Reichb. (*least G.*); leaves linear-lanceolate sessile, stem dichotomous slender, peduncles elongated, calyx campanulate with ovate acute lobes. Exacum *E. B.* t. 235. Gentiana *Linn.*, Microcale *Don.*

Sandy turf-bogs, in the extreme south and south-west of England; also in Pembrokeshire. In Ireland, is found near Cork, upon Dursey Island, and at Glengariff. ☉. 7—10. — A small, slender and graceful plant, with yellow *flowers*, differing from *Gentiana* in the number of *stamens* and divisions of the *cal.* and *corolla*.

[*C. Candollei* Griseb., distinguished by the calyx 4-partite, the segments linear, is said to have been found at Paradis in Guernsey, but we have seen no specimens.]

2. Erythræ'a *Renealm.* Centaury.

Cal. 5-cleft. *Cor.* funnel-shaped, withering, its *limb* short. *Anthers* at length spirally twisted. *Style* 1, deciduous. *Stigmas* 2. *Caps.* linear, 2-celled.—Named from ερυθρος, *red*, the colour of the flowers in most of the species.

1. E. *Centaúrium* Pers. (*common C.*); stem nearly simple, leaves ovate-oblong, flowers nearly sessile fasciculate-paniculate, calyx half as long as the tube of the opening corolla. Gentiana *E. B.* t. 417.

Dry pastures, frequent. ⊙. 6—9. — *Stem* 8—10 inches to a foot high. *Root-leaves* spreading, three-nerved, broader than those of the stem, which are in distant pairs. *Panicles* of *flowers* fascicled near the top of the stem, and forming a sort of *corymb*. *Corolla* handsome, rose-coloured.

2. E. *pulchélla* Fries (*dwarf branched C.*); stem much branched, leaves ovate-oblong, flowers pedicellate in lax panicles, calyx nearly as long as the tube of the opening corolla. Chironia *E. B.* t. 458.

Sandy sea-shores, England and Scotland. Cape Clear Island, Ireland. ⊙. 7—10. — *Stems* 2—4 or 6 inches high, slender and much branched from near the base. *Panicle* spreading, leafy, dichotomous, with a single flower-stalk between the branches. — Perhaps only a *var.* of the preceding.

3. E. *latifólia* Sm. (*broad-leaved tufted C.*); stem 3-cleft at the top, flowers in dense forked tufts, calyx nearly as long as the tube of the opening corolla, segments of the corolla lanceolate, lower leaves broadly elliptical with 5 or 7 ribs. *E. B. S.* t. 2719.

Sea-shore. Sandy ground near the sea, to the north of Liverpool. Near Holyhead. County of Down, Ireland. Staffa. ⊙. 7, 8. — Some Irish specimens have the *leaves* an inch and a half long, and three quarters of an inch broad, not confined to the root, and rising one pair close above the other; yet we can hardly persuade ourselves they are distinct from *E. Centaurium*. Mr. W. Wilson observes that the lobes of the corolla are sometimes oval.

4. E. *linarifólia* Pers. (*dwarf tufted C.*); stem simple or branched, radical leaves crowded spathulate, cauline ones oblong linear obtuse, flowers sessile capitato-paniculate, calyx as long as the tube of the opening corolla deeply cleft. Chironia littoralis *E. B.* t. 2305. Erythræa *Hook. Scot.*

Sandy coasts of Northumberland, Lancashire, Wales, Scotland. Portmarnock sands, Ireland. ⊙. 6—8. — Varying in height from 2—6 inches. *Leaves* all narrow. *Cal.*-segments very long, equalling the tube of the corolla, in our specimens scarcely united by a membrane as in the 2 preceding species; but most of the characters

given for this species are said to vary in individuals; and it has perhaps little right to be kept distinct from *E. Centaurium.*

3. Gentiána *Linn.* Gentian.

Cal. 4—5-cleft. *Cor.* subcampanulate, funnel- or salver-shaped, tubular at the base, destitute of nectariferous glands. *Stam.* 5. *Styles* persistent, often combined. *Caps.* of 1 cell, 2-valved. — Named from *Gentius* king of Illyria, who, according to Pliny, brought into use the species so much valued in medicine, the *bitter Gentian*, *G. lutea.*

* *Cor. subcampanulate, the throat naked.*

1. G. *Pneumonánthe* L. (*Marsh G.*); leaves linear obtuse, flowers terminal and axillary nearly sessile, corolla 5-cleft. *E. B.* t. 20.

Moist heathy places, in several parts of England. ♃. 8, 9. — *Stem* upright, 4 to 6 or 8 inches tall. *Corolla* large, deep blue within, having 5 broad greenish lines corresponding with the segments.

** *Cor. somewhat funnel- or salver-shaped, with 5 large and 5 smaller segments.*

2. G. *vérna* L. (*Spring G.*); stem cæspitose 1-flowered, leaves ovate lower ones crowded, calyx with sharp teeth and prominent angles, corolla salver-shaped with 5 large and 5 small alternate bifid segments. *E. B.* t. 493.

Alpine pastures, rare. Middleton in Teesdale, Durham. Between Gort and Galway, Ireland; and on limestone rocks in the Barony of Burren in the same country. ♃. 4.

3. G. *nivális* L. (*small alpine G.*); branches single-flowered, leaves elliptical, corolla salver-shaped 5-cleft with intermediate small bifid segments, calyx cylindrical its angles keeled (brown). *E. B.* t. 896.

Mountains of Scotland, exceedingly rare; Craigalleach; Ben Lawers; and Glen Isla. Clova. ☉. 8. — This rare and beautiful little alpine plant varies in height from 1 to 6 inches.

*** *Cor.* 4—5-*cleft, somewhat salver-shaped, fringed at the throat.*

4. G. *Amarélla* L. (*small-flowered G.*); stem much branched, root-leaves oval spathulate upper ones ovate-lanceolate sessile, cal. lobes lanceolate nearly equal shorter than the tube of the corolla which is cylindrical or obconical its limb 5-cleft, germen linear-oblong and as well as the capsule sessile or shortly stipitate. *E. B.* t. 236.

Dry pastures in England and Scotland, but not very common. ☉. 4—6. — In the *Flora Londinensis* an opinion is expressed that the *G. Amarella* and *G. Germanica* are not specifically distinct. Grisebach, Koch, and others, think they are, ascribing to the former

pointed calyx lobes and sessile capsules, and to the latter blunt calyx lobes and stalked capsules. *G. Germanica* is said to have been found at Ripon in Yorkshire, and at Tring, Herts; to flower later than our *G. Amarella*, and to have larger and blue flowers. Mr. Luxford, in the Phyt. i. p. 381, has shown that, so far at least as regards British specimens, there are many intermediate states. Our Swiss ones of *G. Germanica* have certainly a conspicuous stalk (about an eighth of an inch long) to the capsule, and constantly large and obconical flowers, while *G. Amarella* of the north of Europe has a sessile capsule; but these, the southern and northern forms, seem to be united by those of this country.

5. G. *campéstris* L. (*Field G.*); stem very much branched many-flowered, leaves ovate-lanceolate, 2 outer segments of the calyx very large ovate, corolla 4-cleft. *E. B.* t. 237.

Hilly pastures, frequent on a limestone or chalky soil in England and Ireland. Abundant in Scotland, especially near the sea. ⊙. 8—10. — *Flowers* larger than in the preceding, and so numerous in specimens gathered on the Isle of Skye, that we have counted 86 on one plant.

[*Swertia perennis* L.: E. B. t. 1441, is said by Hudson to have been found in Wales by Dr. Richardson; but it is supposed that *Gentiana Pneumonanthe* had been mistaken for it.]

4. Chlóra *Linn.* Yellow-wort.

Cal. of 8 deep segments. *Cor.* nearly rotate. *Stam.* 8. *Style* 1, deciduous. *Stigmas* 2, bifid. *Caps.* 1-celled, 2-valved, many-seeded. — Name derived from χλωρος, *pale* or *yellowish green*, in allusion to the colour of its flowers.

1. C. *perfoliáta* L. (*perfoliate Y.*); leaves connate-perfoliate ovate glaucous. *E. B.* t. 60.

Chalky and hilly pastures, chiefly in the middle and southern parts of England. In Ireland, on gravelly soil about Dublin, frequent. ⊙. 6—9. — *Plant* very glaucous, with remote *leaves*, panicled above, and bearing many bright yellow *flowers*, very bitter.

B. *Segments of the corolla induplicate in æstivation. Leaves alternate.* (Gen. 5, 6.)

5. Menyánthes *Linn.* Buckbean.

Cal. 5-partite. *Cor.* funnel-shaped, fleshy, the segments hairy within. *Stam.* 5. *Stigma* 2-lobed. *Capsule* 1-celled, 2-valved; valves bearing the *seeds* along their middle; *seeds* parietal. — Name: μην, a *month*, and ανθος, a *flower:* some say from the duration of the flower.

1. M. *trifoliáta* L. (*Buckbean*, or *Marsh Trefoil*). *E. B.* t. 495.

Marshy places, boggy ground, &c., frequent. ♃. 5—7, — *Roots* densely creeping and so matted as often to render the boggy ground firm where the plant grows. *Leaves* ternate, stalked: *leaflets* obovate, obscurely toothed. The base of the leaf is sheathing, whence arises a *flower-stalk*, supporting a compound *raceme* or *thyrsus*, of many white *flowers*, tipped externally with red and beautifully fringed with white filaments within.

6. Villársia *Vent.* Villarsia.

Cal. 5-partite. *Cor.* rotate or funnel-shaped, thin and membranous, the limb often ciliated. *Stam.* 5. *Caps.* 1-celled, indehiscent (or 2-valved, the *seeds* attached to the margins of the valves).—Named in compliment to *M. de Villars*, author of *Flore de Dauphiné.*

1. V. *nymphæoídes* Vent. (*Nymphæa-like V.*); leaves orbicular-cordate floating, peduncles aggregate single-flowered, corollas ciliated. Menyanthes *L.*: *E. B.* t. 217.

Rare, in rivers and still waters. In the Thames. Abundant in the canal near Downham Market and Wisbeach. In Yorkshire. ♃. 7, 8. — A beautiful plant, easy of cultivation, and difficult to be eradicated. *Flower* large, yellow, curiously plaited. The canals in Holland are in some parts covered with this plant, which has quite a different habit from the true *Menyanthes*. *Stigma* 5-cleft. Mr. Brown first observed that, in all the *aquatic* species of this genus, the *capsule* is valveless; 2-valved in the others: hence Grisebach has divided it into two genera, *Leianthemum*, and *Villarsia*: our British species belongs to the former.

Ord. LVII. POLEMONIACEÆ *Juss.*

Calyx of 5 divisions, persistent, sometimes irregular. *Corolla* regular, 5-lobed. *Stamens* 5, from the tube of the corolla. *Ovary* single, 3-celled; ovules solitary in each cell or superposed. *Style* simple. *Stigmas* 3. *Capsule* 3-celled, 3-valved, valves separating from the axis. *Embryo* straight. *Albumen* horny. — *Herbaceous* plants. Leaves *simple or compound.*

1. Polemónium *Linn.* Jacob's Ladder.

Cor. rotate. *Stam.* inserted upon the 5 teeth or valves which close the mouth of the corolla. *Capsule* many-seeded. — Named from πολεμος, *war*, according to Pliny, this plant having caused a war between two kings who laid claim to its discovery!

1. P. *cæruleum* L. (*blue J.*); leaves pinnated glabrous, leaflets oblong-lanceolate. *E. B.* t. 14.

Banks and bushy places, rare; chiefly found in the North. In Derbyshire and Yorkshire. About Queensferry, Arniston, Bonnington and Delvine woods, Scotland, but probably introduced. Knockmaron

Hill, Ireland. ♃. 6, 7. — *Stem* 1—2 ft. high, angular. *Flowers* large, blue, sometimes white.

Ord. LVIII. CONVOLVULACEÆ *Juss.*

Calyx of 4—5 sepals, permanent, imbricated, often very unequal. *Corolla* regular, deciduous; the *limb* plaited, 4—5-lobed. *Stamens* 4—5 from the base of the corolla. *Ovary* with 2—4 cells, seldom 1, sometimes in 2 or 4 divisions, few-ovuled, ovules solitary in each cell or collateral. *Style* 1, often divided, rarely 2. *Disk* annular, hypogynous or wanting. *Capsule* 1—4-celled, the valves fitting at their edges to the angles of a loose dissepiment, bearing the *seeds* at the base, or bursting transversely. *Albumen* in small quantity, mucilaginous. *Embryo* curved. *Cotyledons* plaited. — Herbs *or* Shrubs, *generally climbing, milky, and purgative. Scammony* is the product of *Convolvulus Scammonia: Jalap*, of *Exogonium purgans*. The *Sweet Potato*, a most valuable esculent root of the tropics and warm climates, is the *Batatus esculenta. Cuscuta* has no leaves, and is parasitical.

1. Convolvulus. Calyx not inclosed within bracteas. Capsule 2-celled, 2-valved. Stems leafy.
2. Calystegia. Calyx enclosed within 2 bracteas. Capsule 1-celled, 2-valved. Stems leafy.
3. Cuscuta. Calyx not inclosed within bracteas. Capsule bursting transversely at the base. Leaves none.

1. Convolvulus *Linn.* Bindweed.

Cal. 5-sepaled, without external bracteas. *Cor.* campanulate. *Style* 1. *Stigmas* 2, linear, cylindrical. *Ovary* 2-celled, 4-ovuled. *Caps.* 2-celled, 2-valved — Named from *convolvo*, to *entwine;* whence comes, too, the English name *Bindweed.*

1. C. *arvénsis* L. (*small B.*); stem climbing, leaves sagittate, their lobes acute, peduncles mostly single-flowered, bracteas minute distant from the flowers. *E. B.* t. 312.

Corn fields, hedges, &c., especially in a light soil, ♃. 6, 7. — *Flowers* rather small, rose-coloured. *Root* running very deep into the ground, and difficult of extirpation.

2. Calystégia *R. Br.* Calystegia. Hooded Bindweed.

Cal. 5-sepaled, inclosed within two large opposite *bracteas. Cor.* campanulate. *Style* 1. *Stigma* 2-lobed; lobes oblong, cylindrical, or flattened. *Ovary* sometimes 2-celled at the base, 1-celled towards the apex, 4-ovuled. *Caps.* 2-valved, 1-celled, — Name: καλος, *beautiful*, and στεγη, a *covering*, on account of the bracteas.

1. C. *sépium* Br. (*great C., or H.*); stem climbing, leaves sagittate their lobes truncate, peduncles 4-sided single-flowered, bracteas heart-shaped, stigmas short and obtuse. Convolvulus *L.*: *E. B.* t. 313.

Moist woods and hedges. ♃. 6—8. — *Flowers* very large, showy, pure white, sometimes rose-coloured, or striped with pink.

2. C. *Soldanélla* Br. (*Sea-side C.*); stem prostrate glabrous, leaves reniform fleshy, peduncles 4-sided single-flowered their angles winged, bracteas ovate, stigmas ovate obtuse wrinkled. Convolvulus *L.*: *E. B.* t. 314.

Sea-shore in sandy places, frequent. ♃. 6—8. — *Root* long, creeping. *Flowers* few, large, rose-coloured. *Ovary* 1-celled, with a ridge on each side in place of dissepiments. *Stigmas* large.

3. Cuscuta *Linn.* Dodder.

Cal. 4—5-cleft. *Cor.* campanulate, 4—5-lobed, the *tube* usually furnished with scales on the inside. *Styles* 2 (rarely united). *Ovary* 2-celled, 4-ovuled. *Caps.* bursting all round transversely at the base, 2-celled. — *Parasitical leafless* plants, *with long twining filiform* stems — Derived probably from its Arabic name, *Keshout;* or from the Hebrew *chuz*, to *bind* or *surround.*

1. C. *Europæ'a* L. (*greater D.*); heads of flowers bracteated sessile, styles included, corolla (at first) with a cylindrical tube afterwards ventricose longer than the close-pressed calyx, "scales adpressed to the tube bifid distant below with rounded spaces." *E. B.* t. 378.

Parasitical on nettles, thistles, &c., not very common. ☉. 7—9. *Stems* very long, red, having small tubercles or papillæ, which serve as roots. *Flowers* clustered, of a pale yellowish-rose colour. *Scales* seem always to exist in the *corolla*, but from being adpressed are not readily observed.

2. C. **Hassíaca* Koch (*Lucerne D.*); "stem branched, flowers fascicled pedicellate, tube of corolla campanulate as long as the limb closed with converging scales, limb 5-cleft, segments spreading with the points corniculate, styles 2, stigmas capitate."

On Lucerne in Essex and Hertfordshire. ☉. 8, 9. — *Flowers* white with the smell of the Heliotrope. *Anthers* yellow. Of this we know nothing. It appears to have been introduced with Lucerne.

3. C. **Epilínum* Weihe (*Flax D.*); heads of fleshy flowers bracteated sessile, styles included, corolla with a globose tube scarcely longer than the campanulate calyx, "scales adpressed to the tube bifid fimbriated distant below with rounded spaces." *E. B. S.* t. 2850.

On flax. Near Ellesmere, Salop; Trelydan Hall, near Welsh

Pool, Montgomeryshire. ☉. 8. — *Stems* simple, yellowish-green. *Flowers* fewer in a head, much more succulent than in the preceding species, and cellular when seen under a lens. *Tube* of corolla always globose; *filaments* very short. *Calyx* broad and spreading, with 5 broad acute teeth. This is abundant in Germany, whence it was probably introduced with flax-seed to us, and is very injurious to the crops of that plant, upon which it is a parasite.

4. C. *Epíthymum* L. (*lesser D.*); styles exserted, heads of many small flowers bracteated sessile, corolla with a cylindrical tube longer than the campanulate calyx, "scales converging as long as the tube of the corolla fimbriated and rounded at the end approximate below with narrow acute spaces." *E. B.* t. 55.

Frequent on furze, heath, and thyme, in exposed situations in England and Scotland. ☉. 7—10. — Smaller than the two preceding species, especially in the *flowers*. *Calyx-segments* acuminate.

5. C. **Trifólii* Bab. (*Clover D.*); styles exserted, heads of small flowers bracteated sessile, "tube of the corolla cylindrical, scales converging half as long as the tube of the cor. fimbriated and rounded at the end distant below with rounded spaces, calyx narrowed below as long as the tube of the corolla." *E. B. S.* t. 2898.

On clover chiefly. Norfolk; Suffolk; Essex; Sussex; Isle of Wight. ☉. 7—9. — Supposed to have been introduced with clover-seed from the Continent, where however it does not seem to be acknowledged as a *species*. It is obviously very near the last, and chiefly differs by the form of the spaces between the scales; but whether that and some other characters proposed in this genus do not depend on the nature of the plant to which the individual is attached has yet to be tested.

Ord. LIX. BORAGINACEÆ *De Cand.*

Calyx 5- rarely 4-cleft, persistent. *Corolla* hypogynous, monopetalous, most frequently regular, 5-cleft, sometimes 4-cleft, with an imbricative æstivation. *Stamens* 5, inserted into the *corolla*, alternate with its segments and equal to them in number, rarely more. *Ovary* 4-partite, 4-seeded. *Ovules* definite, pendulous. *Style* from near the base between the lobes of the ovary. *Achenes* 4, apart or united at the base. *Seeds* without or nearly without *albumen*. *Radicle* superior. — Herbs *or* Shrubs. Leaves *alternate*, *without stipules*, *usually scabrous*. Flowers *generally in more or less compound unilateral and circinate cymes* (*presenting the appearance of spikes or racemes*). — The Boraginaceæ are mild, emollient, and mucilaginous, sometimes slightly bitter and narcotic. The roots of several species afford a red dye.

* *Throat of the corolla not closed with scales or valves.*

1. ECHIUM. Cor. irregular. Filaments long, unequal.
2. PULMONARIA. Cor. regular, funnel-shaped. Cal. prismatic, 5-cleft.
3. LITHOSPERMUM. Cor. regular, funnel-shaped. Cal. 5-partite. Stamens included, filaments very short. Achenes stony.
4. MERTENSIA. Cor. regular, funnel-shaped. Cal. 5-parted. Stamens protruded beyond the tube, filaments elongated. Achenes subdrupaceous.

** *Throat of the cor. more or less closed with scales or valves.*

† *Filaments bifid.*

9. BORAGO. Inner branch of filaments bearing an exserted anther. Cor. rotate.

†† *Filaments entire. Stamens included.*

‡ *Scales subulate, alternate with the filaments.*

8. SYMPHYTUM. Cor. tubular-campanulate.

‡‡ *Scales or valves obtuse.*

7. LYCOPSIS. Tube of cor. slightly bent, limb oblique.
6. ANCHUSA. Tube of cor. straight; lobes straight (not convolute) in æstivation. Cal. in fruit equally divided, terete. Nuts ovate, compressed, wrinkled. Flowers in leafy racemes.
5. MYOSOTIS. Tube of cor. straight; lobes convolute in æstivation. Cal. in fruit equally divided, terete. Nuts ovate, compressed, smooth. Racemes leafless.
10. ASPERUGO. Tube of cor. straight. Cal. in fruit compressed, unequally 2-valved. Nuts ovate, compressed. Flowers axillary, solitary.
10a. ECHINOSPERMUM. Tube of cor. straight. Cal. equally divided, terete. Nuts triquetrous, with muricated margins.
11. CYNOGLOSSUM. Tube of cor. straight. Cal. equally divided, terete. Nuts depressed, roundish-ovate, muricated.

* *Throat of the corolla naked (without conspicuous scales or valves).* (Gen. 1—4.)

1. E'CHIUM *Linn.* Viper's Bugloss.

Cor. irregular; its throat dilated, open and naked. *Filaments* very long, unequal. *Style* bifid. *Achenes* wrinkled, with a flat base, seated on an hypogynous disk, free from the style.—Named from ἔχις, a *viper;* because this, or some allied plant, was supposed to be an effectual remedy against the bite of that animal.

1. E. *vulgáre* L. (*common V.*); stem herbaceous simple hispid with tubercles, leaves linear-lanceolate hispid, flowers in lateral short spikes, stamens longer than the corolla. *E. B.* t. 181. E. Italicum *E. B.* t. 2081. (not L.)

On old walls, banks, fields, and waste grounds, especially in a sandy

or gravelly soil: common on the Surrey hills, with pale fl. ♂. 6, 7. — *Stems* 2—3 feet high. *Root-leaves* spreading, petioled. *Spikes* of *flowers* lateral, secund, recurved, forming one long compound *spike* or *raceme*. *Corolla* at first reddish-purple, then brilliant blue, sometimes white.

2. E. *violáceum* L. (*purple-flowered B.*); stem herbaceous diffuse branched pilose-hispid, lower leaves ovate-oblong petiolate, upper ones oblong cordate and somewhat amplexicaul at the base, spikes elongated, stamens scarcely longer than the corolla. *E. B. S.* t. 2798.

Plentiful on the sandy grounds in Jersey. ♂. 7. — Quite a distinct species from *E. vulgare*, and certainly the *E. violaceum* of Linnæus and the Continental botanists. It is much less hispid than *E. vulgare* and destitute of tubercles. *Stem* branched, spreading, often decumbent. *Spikes* much elongated, bearing more distant *flowers*. *Stamens* very unequal, 2 of them much longer than the corolla, 2 of them about the same length, and 1 shorter.

2. Pulmonária *Linn.* Lungwort.

Cal. with 5 angles, 5-cleft. *Cor.* regular, funnel-shaped, its throat naked. *Stamens* included: *filaments* very short. *Style* simple. *Achenes* with a flat base, seated on an hypogynous disk, free from the style. — Named from *pulmo*, the *lungs*; from the use formerly made of this and other *Boraginaceæ* in pulmonary affections. In the present instance, the spotted leaves, resembling the lungs, were the principal recommendation.

1. P. **officinalis* L. (*common L.*); leaves scabrous, radical ones ovate-cordate petiolate, upper ones of the stem sessile ovate. *E. B.* t. 118 (*excl. the root-leaves*).

Woods and thickets, rare. Dane's wood, near Slindon, Sussex; Durham and Bedfordshire. Near Edinburgh and Glasgow, but scarcely wild. ♃. 5. — About 1 foot high. *Stem-leaves* all more or less ovate; lower ones petiolate, upper ones sessile; all with short hairs, and frequently spotted. *Flowers* purple.

2. P. *angustifólia* L. (*narrow-leaved L.*); leaves scabrous, radical ones petiolate, upper ones sessile all lanceolate. *E. B.* t. 1628.

Woods and thickets, rare. Isle of Wight, and New Forest, Hampshire, and in Flintshire. ♃. 3—6. — Usually taller than the preceding, and different in the shape of its foliage, which is seldom spotted; but these marks are not constant. *Inflorescence* subcapitate.

3. Lithospérmum *Linn.* Gromwell.

Cal. in 5 deep segments. *Cor.* funnel-shaped, its mouth naked (or with very minute scales). *Stamens* included: *filaments* very short. *Style* simple. *Achenes* stony, with a truncated base,

seated on an hypogynous disk, free from the style. — Named from λιθος, a *stone*, and σπερμα, a *seed*; from its very hard shining seeds or achenes. The English *Gromwell* has the same origin in the Celtic, — *graun*, a *seed*, and *mil*, a *stone*.

1. L. *officinále* L. (*common G.*); stem erect very much branched, leaves broadly lanceolate acute nerved rough above hairy beneath, tube of the corolla as long as the calyx, achenes smooth. *E. B.* t. 134.

Dry, waste and uncultivated places, and among rubbish : rare in Scotland. ♃. 6 — *Stem* 1 to 1½ foot high. *Fl.* pale yellow. *Achenes* whitish-brown, highly polished; seldom more than 2 or 3 ripening in each calyx.

2. L. *arvénse* L. (*Corn G.*, or *Bastard Alkanet*); stem erect branched, leaves lanceolate acute hairy, calyx a little shorter than the corolla its segments patent when containing the ripe wrinkled nuts. *E. B.* t. 123.

Corn-fields and waste ground. ☉. 5, 6. — *Corollas* white. *Calycine segments* thrice as long as the fruit.

3. L. *purpuro-cærúleum* L. (*creeping*, or *purple G.*); barren stems prostrate, leaves lanceolate acute, tube of the corolla much longer than the calyx, achenes smooth. *E. B.* 117.

Thickets in a chalky soil, rare. Near Denbigh, in Wales; and Taunton, Somersetshire; Marychurch, Devon; Darenthwood and Greenhithe, Kent; Carsewell Bay, Glamorganshire. ♃. 6, 7. — Distinguished from the two preceding species by its large and bright blue *flowers*.

4. Merténsia *Roth.* Smooth Gromwell.

Cal. 5-cleft or 5-partite, half the length of the cor. *Corolla* funnel-shaped, naked or with 5 plaits or wrinkles between the stamens. *Stamens* inserted near the apex of the tube, protruded; *filaments* ligulate; *anthers* 2-lobed at the base. *Style* filiform, simple, often elongated after flowering. *Achenes* subdrupaceous, with a flat or prominent base seated on an hypogynous disk, free from the style. — Named in honour of *F. C. Mertens*, a German botanist.

1. M. *marítima* Don (*Sea-side S.*); stems procumbent branched, leaves ovate rough with callous dots, upper ones lanceolate, all fleshy and glaucous, achenes smooth. Pulmonaria *L.*: *E. B.* t. 368. Steenhammera *Reich.* Lithospermum *Hook.*

Sea-coast among sand or loose stones. Rare in England, and only on the west coast. Wales. Plentiful in the north and west, rarely in the east of Scotland. Between Portran and Skerries, Ireland. ♃. 5, 6. — This is quite a northern plant, extending to the arctic regions.

Lower *leaves* on foot-stalks; upper ones sessile. *Flowers* somewhat racemose, of a beautiful purplish blue: *calyx* 5-parted, angular when in fruit; *tube* of the *cor.* short, glabrous inside at the base, with minute wrinkles at the mouth; *filaments* linear, flattened. Whole plant very glaucous; and, if the bloom is rubbed off, rough callous points appear, which become white and almost stony in drying, when the rest of the plant turns nearly black. The flavour of the leaves resembles that of oysters.

** *Throat of the corolla more or less closed with scales.* (Gen. 5—11.)

5. Myosótis *Linn.* Scorpion-grass.

Cal. 5-cleft. *Cor.* salver-shaped, the lobes obtuse, twisted in æstivation, the mouth half-closed with short rounded valves. *Stamens* included. *Style* simple. *Achenes* smooth, attached to the bottom of the calyx by a minute flat spot (not perforated at the base). — Named from μυς, μυος, a *mouse*, and ους, ωτος, an *ear*; from the shape of the leaves.

* *Hairs on the calyx all straight and appressed.*

1. M. *palústris* With. (*creeping Water S.*, or *Forget-me-not*); calyx with straight appressed bristles cleft to about one third of its length, when in fruit campanulate open shorter than the diverging pedicels, teeth short triangular, limb of the corolla flat longer than the tube, lobes slightly emarginate, style as long as the calyx.— *α.* pubescence of the stem spreading (or wanting). *E. B.* t. 1973. M. scorpioides, *palustris L.: Sm. Fl. Brit.* i. p. 212.—*β.* pubescence more or less appressed. M. strigulosa *Reich.*

Ditches and sides of rivers, abundant. ♃. 6—8. — A very beautiful, though common plant, and considered to be the emblem of friendship in almost every part of Europe. About 1 foot high. *Flowers* among the largest of our species, bright blue with a yellow eye, and a small white ray at the base of each segment.

2. M. *répens* Don (*creeping Water S.*); calyx with straight appressed bristles cleft to about the middle, when in fruit open or connivent shorter than the diverging pedicels, teeth narrow-lanceolate acute, limb of the corolla flat longer than the tube, lobes somewhat emarginate, style as long as the calyx, pubescence of the stem spreading. *Borr. in E. B. S.* t. 2703.

Moist boggy situations in England and Scotland. ♃ 6—8.— We fear this is not distinct from the last: the character is most unsatisfactory. De Candolle unites them.

3. M. *cæspitósa* Schultz (*tufted Water S.*); calyx with straight appressed bristles, when in fruit campanulate open shorter than the diverging pedicels, teeth narrow-lanceolate bluntish, limb of the corolla concave (or flat when fully ex-

panded) equalling the tube, style very short, pubescence of the stem appressed. *Borr. in E. B. S.* t. 2661.

Common in watery places, both on clay and bog. ☉ or ♂. (♃ or ♂. *Sm.*) 5, 6.—*Root fibrous*, not creeping, annual or biennial. *Stem* throwing out fibres from the lower joints. *Calyx* sparingly sprinkled with appressed white bristles, cleft more deeply than in *M. palustris*, perhaps less than in *M. repens*. *Corolla* varying in size, but usually not much exceeding the calyx.

** *Hairs on the calyx-tube spreading, curved or hooked at the apex.*

4. M. *alpéstris* Schmidt (*Rock S.*); calyx with straight and a few curved bristles deeply 5-cleft attenuate at the base, when in fruit campanulate open shorter than the slightly spreading pedicels, limb of the corolla flat longer than the tube, achenes not carinate, root-leaves on long stalks. M. rupicola *E. B.* t. 2559. M. suaveolens *W. et K.* (not *Poir.*)

Highland mountains, at a great elevation. On the Breadalbane range, extending thence to Schechallion. Cronckley Fell. ♃. 7, 8. — *Stem* 4—6 inches or even 1 foot high, with patent *leaves*. *Lower leaves* on very long foot-stalks. Nothing can exceed the beauty of the large blue *flowers*, which are at first so compact as to be almost capitate, then lengthened into *racemes*. Fries, Koch, and De Candolle consider this an alpine state of *M. sylvatica*: the chief difference consists in the smaller size, long-stalked radical leaves, and open, not closed, fructiferous calyx.

5. M. *sylvática* Hoffm. (*upright Wood S.*); calyx with spreading uncinate bristles deeply 5-cleft obtuse at the base, when in fruit ovate closed shorter than the diverging pedicels, limb of the corolla flat longer than the tube, style nearly as long as the calyx, achenes carinate, root-leaves on short dilated stalks. *E. B. S.* t. 2630.

In dry shady places; chiefly in the north of England and Lowlands of Scotland, but not common. Surrey, Essex, and Kent; Holt, Norfolk, ♃. 5—8.—*Flowers* very large and handsome. A smaller white variety as often cultivated under the name of *M. alba*. Various authors and cultivators pronounce this plant perennial, (Fries says "perennans;" Wahlenberg, "subperennans,") whilst the following species is annual or biennial, between which and the present we can point out no distinctive characters more satisfactory than the somewhat more deeply divided calyx of *M. sylvatica*, its shorter and less remarkably hooked bristles, the broader and flatter corolla, longer style, and the greater size of the whole plant.

6. M. *arvénsis* Hoffm. (*Field S.*); calyx with spreading uncinate bristles half-5-cleft, when in fruit ovate closed shorter than the diverging pedicels, limb of the corolla concave equalling the tube, style very short, raceme stalked. *E. B. S* t. 2629. M. intermedia *Link*.

Very common in cultivated ground, hedge-banks, groves, &c. ☉. or ♂. 6—8.— Although Linnæus included other plants, now regarded as species, in his ideas of *M. scorpioides* and *arvensis*, and even preserved as such in his herbarium a specimen of the next species, yet, since it is evident from *Fl. Suec.* that this is what he held to be the type of the *var.*, we think it best to follow those botanists who have named it *M. arvensis:* Fries asserts that every Swedish botanist knows it to be the "ipsissimam *M. arvensem* Linn.:" it is, moreover, the only one usually found in cultivated fields. This species and *M. sylvatica* are inextricably confounded in *E. Fl.*, perhaps not unjustly.

7. M. *collína* Hoffm. (*early Field S.*); calyx with spreading uncinate bristles, when in fruit ventricose open equalling the diverging pedicels, limb of the corolla concave shorter than the tube, style about equal to the tube of the calyx, raceme stalked usually with one distant flower at the base. *E. B. S.* sub fol. 2629. M. arvensis *E. B.* t. 2558. M. hispida *Schlecht.*

On sandy banks, wall-tops, and other very dry places. ☉. 4, 5. — "May at all times be distinguished from *M. versicolor* at a glance, by its brilliant blue flowers, which do not expand till by the uncurling of the raceme they are brought into a perpendicular position, but continue open till the next 2 or 3 above them are expanded. Colour an unchangeable blue." *J. E. Bowman.*

8. M. *versícolor* Lehm. (*yellow and blue S.*); calyx with spreading uncinate bristles, when in fruit oblong closed longer than the almost erect pedicels, limb of the corolla concave shorter than the exserted tube, style as long as the calyx, raceme stalked. *E. B.* t. 2558 (ad calcem), and t. 480 (left-hand figure).

Common in wet meadows, &c., as well as dry places; hence varying much in height. ☉. 4—6. — *M. versicolor* is distinguishable at once from *M. stricta* (which is *M. versicolor* β. Lehm. and *M. arvensis* Reich.) by its stalked racemes. In *M. stricta* the pedicels are also shorter than the calyx; but the flowers begin among the leaves, sometimes from the very base of the stem; we believe, too, that none of them are yellow, and that they have a much shorter tube. "In *M. versicolor* the flowers are first yellow, then they acquire a tinge of blue, and finally turn quite blue as the corolla shrivels. They also expand on the curled portion of the raceme while they are inverted, and by the time they become erect are shrivelled." *J. E. Bowman.*

6. Anchúsa *Linn.* Alkanet.

Cal. 5-cleft, or 5-partite. *Cor.* funnel-shaped, *tube* straight, its mouth closed with convex connivent scales, the segments straight (not twisted) in æstivation. *Stamens* included. *Achenes* depressed. *Nuts* concave at the base, seated on an hypogynous disk, free from the style.—Name: αγχουσα, in Greek, from αγχω, to *constringe*, "because any one chewing the leaves, and spitting into the mouth of a viper, will kill it," *Diosc.*, by means of its

(supposed) power of creating irritation and inflammation in the throat. (!) The roots of *A. tinctoria* yield a red dye which was used in former times to stain the face.

1. A. **officinális* L. (*common A.*); leaves oblong-lanceolate, spikes crowded unilateral, bracteas ovate-lanceolate as long as the calyx. *E. B.* t. 662.

Waste ground, rare. On the Links at Hartley Pans, Northumberland. Kilsyth and Arnbrae; and at Uddingston, 3 miles from Glasgow. ♃. 6, 7. — *Stem* 1—2 feet high, rough and hispid. *Cor.* deep purple, the segments of the *limb* rather narrow.

2. A. **sempervírens* L. (*evergreen A.*); leaves ovate, lower ones upon long stalks, peduncles axillary, flowers subcapitate accompanied by two leaves. *E. B.* t. 45.

Waste ground, among ruins, and by road-sides, in many parts of England; perhaps wild in Yorkshire and Devonshire. Scotland, but certainly introduced. ♃. 5, 6. — *Flowers* of a beautiful blue. The shape of the *corolla* is, as Sir J. E. Smith observes, rather salver- than funnel-shaped; and thus the genus is with difficulty distinguishable from *Myosotis*, unless attention be paid to the achenes, and the æstivation of the corolla. Daily experience teaches that the more natural the families, the greater is the skill requisite for framing decided marks of distinction between the genera.

7. Lýcopsis *Linn.* Bugloss.

Cal. deeply 5-cleft. *Cor.* funnel-shaped, with a curved *tube*, the mouth closed with convex connivent scales: *limb* oblique. *Stamens* included. *Achenes* depressed, concave at the base, seated on an hypogynous disk, free from the style. — Named from λυκος, a *wolf*, and οψις, a *face*; from a fancied resemblance in its gaping flower to the head of a wolf.

1. L. *arvénsis* L. (*small B.*); leaves lanceolate repand-denticulate very hispid, calyx erect while in flower. *E. B.* t. 938.

Corn-fields and hedge-banks, frequent. ☉. 6, 7. — Whole plant very hispid; hairs or bristles seated on a white, callous tubercle. *Lower leaves* lengthened into a petiole; *upper ones* sessile, semiamplexicaul. *Racemes* leafy. *Flowers* small, bright blue; differing from those of *Anchusa* in the curvature of the tube.

8. Sýmphytum *Linn.* Comfrey.

Cal. 5-cleft or 5-partite. *Cor.* enlarged upwards, its throat closed with connivent lanceolate subulate scales. *Achenes* ovate, excavated at the base, seated on an hypogynous disk, free from the style. — Named from συμφυω, to *unite*; from its imagined vulnerary qualities.

1. S. *officinále* L. (*common C.*); stem winged above, leaves

ovate-lanceolate attenuated at the base and very decurrent. *E. B.* t. 817.

Banks of rivers and watery places, frequent. ♃. 5, 6. — *Stem* 2—3 ft. high branched above. *Root-leaves* ovate, petiolate. *Racemes* in pairs, secund, drooping. *Corollas* large, yellowish-white, often purple.

2. S. *tuberósum* L. (*tuberous C.*); stem simple, leaves ovate-oblong attenuate at the base, upper ones only slightly decurrent. *E. B.* t. 1502.

Shady woods and river-banks; frequent in Scotland, particularly in the Lowlands. Rare in England; Durham. ♃. 6, 7. — Resembling the last, but it is very distinct. Upper *leaves*, from which the *peduncles* spring, generally in pairs, large, ovate-lanceolate, a little decurrent; whereas those of *S. officinale* are very narrow, and run down into winged appendages to the stem.

9. Borágo *Linn.* Borage.

Cal. deeply 5-cleft. *Cor.* rotate, having its throat closed with 5 erect obtuse and emarginate teeth. *Stamens* exserted: *filaments* bifid, the inner branch bearing the anther; *anthers* linear-lanceolate, connivent. *Achenes* with an excavated base, seated on an hypogynous disk, free from the style. — Named from *cor*, the *heart*[1], and *ago*, to *bring*, thence corrupted into *Borago:* or more directly from *Borrach*, a *courageous* or *noble* person, in Celtic.

1. B. **officinális* L. (*common B.*); lower leaves obovate attenuate at the base, segments of the corolla ovate acute spreading. *E. B.* t. 36.

Among rubbish and waste ground. ☉. 6, 7. — Whole plant very hispid. *Stem-leaves* petiolate and eared at the base, uppermost ones sessile. *Cor.* large, brilliant blue, with very prominent *stamens.*

10. Asperúgo *Linn.* Madwort.

Cal. 5-cleft, unequal, with alternate smaller teeth, enlarged and compressed in fruit. *Cor.* (short) funnel-shaped, its mouth closed with convex connivent scales. *Achenes* compressed, warted, fixed by their edge to the persistent base of the *style.* — Named from *asper*, *rough;* eminently applicable to this plant, even among the group of *Asperifoliæ.*

1. A. **procúmbens* L. (*German M.*). *E. B.* t. 661.

Waste places, principally in the North. Durham; Northumberland; Salop; Essex; Kent. Carnarvonshire. About Dunbar, and near Edinburgh; Forfar and Moray shires. ☉. 6, 7. — *Stems* procumbent, angular, rough with short hooked prickles. *Leaves* oblong-

[1] Hence the old adage — "I *Borage* always bring Courage."

lanceolate, solitary or opposite, or 3—4 nearly from the same point of the stem; lower ones petiolate, all rough and slightly hispid. *Flowers* blue, axillary, solitary. *Peduncles* short, at first erect, then curved downward. *Cal.* small, much enlarged in fruit.

[*Echinospermum Lappula* has been found at Southwold, Suffolk, in August, 1839; and near Ware mill, Hertfordshire, in 1841; and *E. deflexum* Lehm. near Chawton in Hampshire; but both, we fear, introduced from the Continent.]

11. Cynoglossum *Linn.* Hound's-tongue.

Cal. 5-cleft. *Cor.* (short) funnel-shaped, its mouth closed with prominent, convex, connivent scales. *Stamens* included within the corolla. *Achenes* roundish-ovate, depressed, muricated, fixed by the edge to the persistent base of the *style.*—Named from κυων, a *dog*, and γλωσσα, a *tongue*; from the shape and texture of the leaf.

1. C. *officinale* L. (*common H.*); lower leaves elliptical stalked softly downy, upper ones lanceolate narrowed below subcordate and semiamplexicaul, racemes without bracteas. *E. B.* t. 921.

Waste grounds and by road-sides; less frequent in Scotland. ♂. 6, 7.—Whole plant soft to the touch, dull-green, with a fetid smell; often two feet high. Lower *leaves* on long foot-stalks. *Flowers* purplish-red. *Fruit* very rough: *achenes* flat in front, surrounded by a thickened slightly prominent margin.

2. C. *sylvaticum* Hænke (*green-leaved H.*); stem-leaves lanceolate broad at the base shining sessile slightly hairy and scabrous especially beneath, upper ones somewhat narrowed below and amplexicaul, racemes without bracteas. *E. B.* t. 1642.

Shady places, by road-sides, &c., in the middle and east of England, rare. Carse of Gowrie in Scotland. Near Balbriggan, Ireland. ♂. 6, 7.—Distinguished readily from the last by its more or less shining and brighter-coloured *leaves*, free from pubescence, and their different figure. *Root-leaves* ovate-lanceolate, on very long foot-stalks. *Achenes* flat in front, without a prominent margin.

Ord. LX. SOLANACEÆ *Juss.*

Calyx 5- rarely 4-partite, persistent. *Corolla* monopetalous, hypogynous, its *limb* 5-cleft, equal or somewhat unequal, deciduous, with a plicate or imbricative æstivation. *Stamens* inserted into the corolla, alternate with its segments and equalling them in number. *Ovary* 1- 2- or 4-celled. *Style* 1. *Stigma* obtuse, rarely lobed. *Pericarp* 1- 2- or 4-celled; either a *capsule* with a parallel double dissepiment, or a *berry*, with the receptacles united to the dissepiments. *Seeds* numerous, peritropal. *Embryo* included in a fleshy *albumen*, often out of the axis. *Radicle* inferior, turned away from the more or less lateral

hilum. — Herbs *or* shrubs. Leaves *often in pairs or fascicled, without stipules, floral ones sometimes opposite.* Inflorescence *usually extra-axillary (lateral with respect to the petiole).* Linnæus called this family *Luridæ*, and fancied that their lurid appearance indicated the dangerous properties common to many of them. They are acrid and narcotic, as the *Deadly Night-Shade, Mandragora, Henbane, Thorn-apple, Tobacco*, &c.; whilst the root of one, when cooked, affords a most important article of food, the *Potato;* and the fruits of the *Love-apple, Winter-cherry*, and *Capsicum* are condiments.

1. DATURA. Cal. tubular. Caps. 4-valved.
2. HYOSCYAMUS. Cal. tubular. Caps. opening transversely with a lid.
3. ATROPA. Cal. 5-partite. Anthers distant. Berry 2-celled.
4. SOLANUM. Cal. deeply divided. Anthers connivent, opening by pores. Berry 2-celled.

* *Margins of the lobes of the corolla imbricated in æstivation.*
ATROPEÆ.

1. DATÚRA *Linn.* Thorn-apple.

Cal. tubular, deciduous. *Cor.* funnel-shaped, angular, plaited. *Anthers* opening by longitudinal slits. *Stigma* 2-lobed. *Capsule* half-4-celled, 4-valved. — Named from its Arabic appellation *Tatórah* (Forskal). In some parts of the East Indies it is called *Daturo.*

1. D. **Stramónium* L. (*common T.*); herbaceous, leaves ovate angulate-sinuate glabrous, fruit ovate erect clothed with numerous nearly equal spines. *E. B.* t. 1288.

Waste ground in England. ☉. 7—10.— The narcotic qualities of this plant are well known. The *capsule* is 2-celled; but each cell is again divided below by a dissepiment, so that the lower portion has 4 dissepiments of which 2 only reach the top; the summit is truly 2-celled. *Flowers* white. A variety, with purple *stems* and *flowers*, has been found by Dr. Bromfield at Southsea, Portsmouth.

2. HYOSCÝAMUS *Linn.* Henbane.

Cal. tubular, 5-cleft. *Cor.* funnel-shaped, oblique. *Anthers* opening by longitudinal slits. *Stigma* capitate. *Caps.* 2-celled, opening with a lid. — Named from ὑς, ὑος, a *hog*, and κυαμος, a *bean.* Hogs are said to eat the fruit, which bears some resemblance to a bean: the seeds do not prove injurious, though the plant be esteemed poisonous.

1. H. *níger* L. (*common H.*); leaves amplexicaul sinuate, flowers nearly sessile axillary unilateral. *E. B.* t. 591.

Waste places, especially in a chalky soil, often near towns and villages. ☉ or ♂. 6—8.— Whole plant covered with unctuous fetid hairs. *Stem* much branched, rounded. *Leaves* subovate. *Calyx* veined, as is the large dingy yellow *corolla*, with purplish-brown

lines, which however are wanting in a variety found in Surrey by Mr. Watson; its tubular part swells and firmly encloses the *capsule*, of which the upper portion falls off like a lid. *Plant* highly narcotic.

3. A'TROPA *Linn.* Dwale.

Cal. 5-partite. *Cor.* campanulate, with a short *tube*, the lobes equal. *Stam.* distant above. *Berry* of 2 cells.—Named from *Atropos*, one of the Fates, in allusion to its deadly quality; whence also the English name *dwale* (*deuil*, Fr.; *dolor*, Lat.).

1. A. *Belladónna* L. (*common D.*, or *deadly Nightshade*); stem herbaceous, leaves ovate undivided, flowers axillary on short peduncles. *E. B.* t. 592.

Hedges and waste places, especially among ruins and near towns. ♃. 6—8.—*Stems* 3 feet and more high. *Leaves* entire, some very large, but placed in pairs of unequal sizes. *Flowers* drooping, lurid purple. *Berries* shining, black, highly injurious when taken internally. Their effects are said to be best counteracted by drinking plentifully of vinegar.

** *Lobes of the corolla valvate in æstivation.* SOLANEÆ.

4. SOLÁNUM *Linn.* Nightshade.

Cal. of 5—10 segments. *Cor.* rotate. *Anthers* opening with 2 pores at the extremity. *Berry* roundish, 2- or more celled.—Name of doubtful origin. According to some from *solamen*, on account of the *comfort* or *solace* derived from some species as a medicine.

1. S. *Dulcamára* L. (*woody N.* or *Bittersweet*); stem without thorns shrubby flexuose climbing, leaves cordate, upper ones auricled hastate, corymbs drooping inserted opposite the leaves. *E. B.* t. 565.

Moist hedges and thickets. Not common in Scotland. About Dublin. ♄. 6—8.—Glabrous or hairy. *Flowers* purple, with 2 green tubercles at the base of each segment. *Anthers* large, yellow, united in a pyramidal or cone-shaped figure. *Berries* ovate, red.—This has been much employed in medicine, especially in rustic practice. A *var.*, with prostrate diffuse stems, a more deeply divided calyx with rounded segments, and few or none of the leaves hastate, grows on the pebbly sea-beach in Sussex, Cornwall, and Galway: it was first noticed by Ray.

2. S. *nígrum* L. (*common N.*); stem without thorns herbaceous, leaves ovate bluntly toothed and waved, umbels lateral drooping. *E. B.* t. 566.

Waste places, fields, &c.; frequent. ☉ or ♂. 6—11.—*Flowers* white. *Berries* globose, black,—sometimes green in Sussex and at Walthamstow: *Borrer.*

Ord. LXI. OROBANCHACEÆ *Vent.*

Calyx variously divided, persistent. *Corolla* irregular, persistent, with an imbricative æstivation. *Stamens* 4, didynamous. *Anthers* 2-celled, the cells distinct, parallel, often mucronate. *Ovary* on a fleshy disk, 1-celled, with 2—4 parietal, many-seeded receptacles. *Style* 1. *Stigma* 2-lobed. *Capsule* 2-valved. *Seeds* very minute. *Embryo* at the apex of a fleshy *albumen.*— Herbaceous, *dingy-coloured, somewhat succulent, leafless plants, glandular and scaly, generally parasitical on the roots of other plants.*

1. Orobanche. Cor. ringent, 4—5-cleft, deciduous with a persistent base.
2. Lathræa. Cor. two-lipped, deciduous, upper lip entire, concave.

1. Orobánche *Linn.* Broom-rape.[1]

Cal. of 2 lateral, often combined and bifid segments, bracteated. *Cor.* ringent, 4—5-cleft. A *gland* is at the base of the *germen* beneath.—*Leafless, brown or purplish, herbaceous, scaly* plants, *often attached to the roots of other plants.*—Named from ὀροβος, a *leguminose* or *pea-like plant,* and αγχειν, to *strangle;* the roots, being frequently attached to plants of that description, are supposed to injure them.

* *Bracteas solitary under each flower. Sepals 2, entire or bifid, distinct or connected below in front. Valves of capsule cohering at the base and apex.* Osproleon.

1. O. *májor* L.? (*greater B.*); stem simple, sepals 2-nerved equally bifid (or entire) nearly as long as the tube of the corolla, corolla campanulate ventricose at the base in front curved on the back, lips wavy scarcely denticulate, upper one concave nearly entire, lower one in 3 segments, the middle lobe twice as large as the lateral ones, stamens inserted near the base of the corolla glabrous below, their upper part and the style glandular pubescent. *E. B.* t. 421. O. Rapum *Thuill.*

On the roots of Broom and Furze and other leguminose plants, not unfrequent in England. ♃. 5—7.—*Stem* 1—1½ ft. high, leafless. Whole plant dingy purplish-brown, pubescent. *Stem* swelling at the base and very scaly: scales more distant upwards and becoming *bracteas* among the flowers, one at the base of each. *Flowers* in a long *spike. Cor.* large.

[1] From the great difficulty of deriving characters in this genus from dried specimens, we have trusted to Reuter, in De Candolle's Prodromus, and others who have had numerous opportunities of studying the genus; but in all parasitical plants the appearance may be so completely altered by the structure of the tribe they prey upon, that we fear many reputed species are merely different states of the same.

2. O. *caryophyllácea* Sm. (*Clove-scented B.*); stem simple, sepals many-nerved lanceolate equally bifid shorter than the tube of the corolla touching each other or combined in front, corolla campanulate curved on the back, limb spreading unequally toothed, upper lip broad 2-lobed, lower 3-lobed, the segments erect obtuse nearly equal wavy, stamens inserted above the base of the corolla hairy below, their upper part and the style glandular-pilose, stigma dark purple. *E. B. S.* t. 2639. O. Galii *Dub.*

On the roots of *Galium Mollugo*, in South Kent. 4. 7.

3. O. *rúbra* Sm. (*red B.*); stem simple, sepals 1-nerved subulate acuminate longer than the tube of the corolla undivided, corolla tubular-campanulate slightly curved externally and the upper lip within glandular-pubescent, lips acutely toothed and crisped, upper one 2-lobed, lower 3-lobed, the middle segment rather longer than the lateral ones, stamens inserted near to the base of the corolla slightly hairy below, their upper part and the upper part of the style glandular-hairy. *E. B.* t. 1786.

Frequent upon basalt and trap rocks in the Hebrides and adjacent shores of the mainland, parasitical upon *Thymus Serpyllum*. Near Kirkaldy. Cave-hill near Belfast, Ireland. 4. 7, 8.—We have no doubt but this and *O. Epithymum* DC. are the same; but they differ in character as much as some of the other species.

4. O. *elátior* Sutt. (*tall B.*); stem simple, sepals many-nerved equally bifid as long as the tube of the corolla connected in front, corolla tubular-campanulate curved, limb spreading unequally toothed wavy, upper lip 2-lobed, lower 3-lobed, the segments nearly equal acute, stamens inserted below the middle of the tube of the corolla glandular-hairy in their lower half, upper part and the style nearly glabrous. *E. B.* t. 568.

Clover-fields and bushy places in a light gravelly soil, on *Centaurea Scabiosa*, in several parts of England. 4. 6—8.—Taller and yellower than all the preceding. *Flowers* with their upper lip lobed. "*Stamens* inserted above the third part of the tube of the cor., but below its middle."

5. O. *Pícridis* F. W. Schultz (*Picris B.*); stem simple, sepals 1-nerved entire or in front 2—3-nerved, gradually attenuated into as many subulate points longer than the tube of the corolla, corolla tubular ventricose at the base curved at the apex nearly straight at the back, leaves denticulate wavy, upper nearly undivided its sides straight, lower of 3 roundish rather unequal lobes middle one the largest, stamens inserted below the middle of the tube hairy on the lower half within, style glandular-hairy below in front and on its upper half, lobes of the stigma (purple) nearly distinct. *E. B. S.* t. 2956.

On the roots of *Picris hieracioides*. Near Comberton, Cambridge-

shire; Giltar Head, Pembrokeshire; Rose Hall Green, Isle of Wight. ⊙. 6, 7.—This and the two next are probably mere varieties, the characters assigned by authors being very unsatisfactory and somewhat contradictory; but from not having an opportunity of contrasting them in a living state, we yield to the opinion of others. Dr. Bromfield however was inclined to unite the present species with *O. minor*, from which it chiefly differs by the sepals, while he considered *O. Hederæ* to be distinct.

6. O. *minor* Sutt. (*lesser B.*); stem simple, sepals many-nerved ovate below suddenly contracted into 1—2 subulate points as long or longer than the tube of the corolla, corolla tubular curved, limb obtusely toothed veined wavy, upper lip more or less emarginate its sides straight, lower of 3 roundish nearly equal lobes, stamens inserted below the middle of the tube glabrous more or less hairy below, style nearly glabrous or with scattered hairs in front, lobes of the stigma (purple) nearly distinct. *E. B.* t. 422.

Clover-fields, abundant in Norfolk, Kent, Surrey, Hants, Brecknockshire, &c., "parasitic on a variety of plants of very different natural orders, but most frequently on the roots of *Trifolium pratense*." *Bromf.* ⊙. 6—10.—Dr. Bromfield well observed that the hairiness of the stamens varies exceedingly, and it is to be feared that the style does so likewise throughout the whole genus.

7. O. *amethýstea* Thuill. (*bluish B.*); stem simple, sepals 3—9-nerved ovate below suddenly contracted into 1—2 subulate points, corolla tubular bent suddenly near the base and curved forwards then straight, lips unequally acutely denticulate wavy with branched veins, upper concave emarginate or 4-lobed, lobes of lower lip unequal middle one the larger, stamens inserted in the curvature of the corolla hairy at the base within glabrous above the middle, style nearly glabrous, lobes of stigma (purple) divaricate. *Hore in Phytol.* ii. p. 239. O. Eryngii *Duby*.

Parasitical upon *Daucus maritimus*, at Whitsand Bay near Plymouth. ⊙? (*Hore*). 4 (*Reuter*). 7.—We have not seen specimens, and have taken our character from Mr. Hore's description, between which and that by Reuter there are some points of difference; and on the Continent the plant seems confined to *Eryngium campestre* and *maritimum*. We fear it is too closely allied to *O. minor*, from which it appears only to differ by the curvature of the corolla, and the divaricated lobes of the stigma. Mr. Borrer (in the Bot. Gazette, ii. p. 96) states that Mr. Hore considered living plants of the true *O. minor* from Sussex to be identical with his plant.

8. O. *Hederæ* Duby (*Ivy B.*); stem simple, sepals 1-nerved ovate below suddenly contracted into 1—2 subulate points nearly as long or longer than the tube of the corolla, corolla tubular curved, limb denticulate wavy, upper lip 2-lobed its sides straight, lower of 3 roundish nearly equal lobes, middle

lobe rather the longest, stamens inserted above the base of the corolla glabrous with a few scattered hairs on the lower half, style glabrous downy or with a few hairs on the upper part, lobes of the stigma (yellow) cohering to near the middle. O. barbata *Bab. in E. B. S.* t. 2859.

Parasitical upon Ivy in the south and west of England and Wales. Leixlip and Mucross Abbey, Ireland. ♃. 6—8.—M. Reuter describes the insertion of the stamens to be only a little below the middle: we find them much nearer the base; so that this character may vary in different specimens. This is best and chiefly distinguished from the two last by its yellow stigma cleft only two-thirds down instead of to the base.

** *Bracteas* 3 *under each flower. Sepals* 4—5, *all united at the base into a tubular calyx. Anthers glabrous or woolly only on the suture. Valves of capsule separated at the apex.* Trionychion.

9. O. *arenária* Bork. (*Sand B.*); stem simple, calyx 5-toothed, teeth triangular subulate shorter than the tube of the corolla, corolla tubular nearly straight, middle of the tube compressed at the back, throat slightly inflated, upper lip cloven, lobes of the lips obtuse reflexed at the margin, suture of the anthers hairy, style glandular-downy. Phelipæa *Walt.: Reuter.*

Parasitical on the roots of *Achillea Millefolium* and probably other allied genera, in the Channel Islands. ♃. 7, 8.—We have seen no specimen.

10. O. *cærúlea* Vill. (*purple B.*); stem simple, calyx with 5 lanceolate acute teeth shorter than the tube of the corolla, corolla tubular curved in front, middle of the tube compressed, upper lip of the corolla cloven, lobes of the lips acute with reflexed margins, anthers glabrous, style glandular-downy. *E. B.* t. 423.

Grassy pastures near the sea, rare; principally found in Norfolk. ♃. 6—8.—More inclining to purplish-blue than any of the preceding.

11. O. *ramósa* L. (*branched B.*); stem branched, calyx with 4 triangular ovate acuminate teeth, corolla tubular-infundibuliform, upper lip deeply cloven, all the lobes rounded nearly equal, stamens pubescent at the base, anthers glabrous or slightly ciliated, style sparingly glandular. *E. B.* t. 184.

On hemp-roots, very rare; chiefly found in Norfolk and Suffolk. Jersey. Sark. ☉. 7—9.

2. Lathræ'a *Linn.* Tooth-wort.

Cal. campanulate, equally 4-cleft. *Cor.* tubular, 2-lipped: the upper *lip* concave, entire; lower 3-cleft. A depressed *gland* is at the base of the *germen*.—Plants *leafless, coloured.*—Name: Λαθραιος, *hid* or *concealed*; the plant growing much concealed by the earth or dead leaves.

1. L. *squamária* L. (*greater T.*); stem simple, flowers pendulous in one-sided racemes, lower lip of the corolla 3-cleft. *E. B.* t. 50.

Woods and coppices, apparently parasitic on the roots of Hasels, Elms, and other trees, in various parts of England, Scotland, and Ireland. 4. 3—5.—Branching from the very base. Whole plant succulent, with many fleshy, tooth-like scales. *Bracteas* broadly ovate or lanceolate. *Flowers* purplish.

Ord. LXII. SCROPHULARIACEÆ *Juss.*

Calyx 4—5-lobed, persistent. *Corolla* monopetalous, generally irregular, deciduous, with an imbricative æstivation. *Stamens* 4, didynamous, rarely equal, sometimes 2 or 5. *Style* 1. *Stigma* 2-lobed, rarely undivided. *Capsule* (very seldom fleshy) 2-celled, 2—4-valved, or opening by pores; the valves entire or bifid, with a dissepiment either double from the inflexed margins of the valves, or simple, parallel and entire, or opposite and bipartite. *Receptacle* of the seeds central, united to the dissepiment, or eventually separating. *Seeds* few or numerous, ascending. *Embryo* straight or slightly curved, homotropal, enclosed in a fleshy *albumen*. *Radicle* inferior pointing to the hilum.—Herbs, *sometimes* Shrubs *usually with opposite leaves*. Br. In this order are many medicinal plants, as the *Hedge-Hyssop*, *Gratiola*; the *Foxglove*, &c.

A. *Stamens* 2.

1. Veronica.

B. *Stamens* 4, *didynamous or equal.*

* *Calyx with* 4 *teeth or divisions.*

2. Bartsia. Upper lip of cor. entire or emarginate, arched, not compressed laterally.
3. Euphrasia. Upper lip of cor. bifid, not compressed laterally.
4. Rhinanthus. Upper lip of cor. compressed laterally. Anthers obtuse. Calyx inflated.
5. Melampyrum. Upper lip of cor. compressed laterally. Anthers obtuse. Calyx tubular.

** *Cal. with* 5 *teeth or divisions, or* 2—3 *lobed.*

6. Pedicularis. Cal. inflated, 5-toothed (or 2—3-lobed), teeth sometimes leafy. Cor. ringent, open at the throat. Upper lip compressed.

6a. Mimulus. Cal. prismatical, 5-toothed. Cor. ringent, upper lip folded back at the sides, not compressed.

7. Scrophularia. Cal. 5-lobed or 5-cleft. Cor. nearly globose, unequal.
8. Digitalis. Cal. 5-partite. Cor. campanulate, unequal.
9. Antirrhinum. Cal. 5-partite. Cor. personate, gibbous at the base.
10. Linaria. Cal. 5-partite. Cor. personate, spurred at the base.

11. Limosella. Cal. 5-cleft. Cor. campanulate, equal. Caps. 1-celled.
12. Sibthorpia. Cal. 5-sepaled. Cor. rotate, segments unequal. Caps. 2-celled, loculicidal.

C. *Stamens* 5.

13. Verbascum. Cal. 5-sepaled. Cor. rotate, segments unequal. Caps. 2-celled, septicidal.

A. *Stamens* 2. (Gen. 1.)

1. Veronica *Linn.* Speedwell.

Cor. 4-cleft, rotate, lower segment narrower. *Stam.* 2. *Caps.* 2-celled. — Name first introduced into Botany in the middle ages, supposed by some to be the same as *Bernice* or *Beronice;* and by others to be derived from *ιερα εικων*, the *sacred picture*, the flowers (like St. Veronica's handkerchief) being imagined to bear a representation of the countenance of Our Saviour; (scarcely from the Persic[1] *viru*, *remembrance*, and *niku*, *good*).

* *Root perennial. Spikes or racemes terminal.*

† *Tube of the corolla longer than its own diameter.*

1. V. *spicáta* L. (*spiked S.*); raceme spicate elongated dense, leaves pubescent ovate or lanceolate crenato-serrate entire towards the apex, the lower ones broader obtuse stalked, stem ascending branched only at the very base, capsule ovate emarginate with a long style. — *α.* lower leaves oblong wedge-shaped at the base. *E. B.* t. 2. — *β.* lower leaves ovate rounded or subcordate at the base. V. hybrida *L.*: *E. B.* t. 673.

Rare. In dry chalky pastures about Newmarket and Bury. — *β.* in Lancashire and in Wales. ♃. 7, 8.

†† *Tube of the corolla very short.*

2. V. *serpyllifólia* L. (*Thyme-leaved S.*); raceme somewhat spiked many-flowered, leaves broadly ovate or elliptical very obtuse slightly crenate, capsules inversely reniform as long as the style. — *α.* racemes elongated. *E. B.* t. 1075. — *β. alpina;* stem prostrate often rooting, racemes short. V. humifusa *Dicks.*

Pastures and road-sides, abundant. On high mountains. ♃. 5, 6. — The *var. β.* is a singular and very beautiful one, and is often mistaken for *V. alpina.* In both, the *stems*, and sometimes the *leaves*, are more or less pubescent.

3. V. *alpina* L. (*alpine S.*); raceme corymbose few-flowered, leaves elliptic-ovate toothed or entire, lower ones smaller, raceme hairy, hairs spreading not glandular, capsule obovate notched tipped with the very short style. *E. B.* t. 484.

[1] Certainly not Arabic, as stated in *Notes and Queries*, vol. ix. p. 537.

Near the summits of the Highland mountains, rare. ♃. 7, 8. —*Stem* about 4 inches high, turning black when dry. Best distinguished from all the varieties of *V. serpyllifolia* by its more upright growth, larger and more acute *leaves;* by the fewer, denser, and brighter blue *flowers,* which are more hairy especially about the *calyx* and *bracteas;* and by the obovate *capsule* with its very short *style.*

4. V. *saxátilis* L. (*blue Rock S.*); racemes lax few-flowered corymbose pubescent, the hairs not glandular, leaves elliptical subserrate, stem spreading, capsule ovate very slightly emarginate its valves bifid. *E. B.* t. 1027.

On perpendicular exposed rocks in Scotland, rare: the Breadalbane and Clova mountains. ♃. 7.— *Stems* slender, procumbent, woody, much branched. *Leaves* glabrous, bright green, when dry almost black, but semipellucid, thin, and distinctly veiny. *Flowers* large, of a most brilliant blue, in *corymbs.* What is usually known under this name in Switzerland and the Pyrenees is a variety of the next; if indeed, as Mr. Bentham suggests, the two species are distinct: there is no difference in the capsule.

5. V. **fruticulósa* L. (*flesh-coloured S.*); raceme many-flowered glandular-pubescent, leaves elliptic-lanceolate subserrate coriaceous, stem ascending woody branched at the base, capsule ovate very slightly emarginate its valves bifid. *E. B.* t. 1028.

On Ben Cruachan, Argyleshire: *Dr. Walker.* Ben Lawers: *R. Brown, Esq.* ♃. 7.— No botanist, except those just mentioned, has ever detected this plant truly wild in the British dominions; nor have we been able to see a native specimen.

** *Root perennial. Racemes axillary.*

6. V. *scutelláta* L. (*Marsh S.*); racemes alternate, pedicels divaricating reflexed in fruit, leaves sessile linear somewhat toothed, capsule of 2 flattened orbicular membranous lobes, stem nearly erect. *E. B.* t. 782.

Wet places and sides of ditches. ♃. 7, 8.—*Stem* usually glabrous, sometimes hairy. *Racemes* nearly opposite. *Flowers* flesh-coloured with darker bluish veins.

7. V. *Anagállis* L. (*Water S.*); racemes opposite, leaves sessile lanceolate serrate, capsule elliptical slightly emarginate, stem erect. *E. B.* t. 781.

Ditches and watery places, less frequent in Scotland than in England. ♃. 7, 8.—Intermediate in appearance between *V. scutell.* and *V. Beccab.*, yet abundantly distinct from both. *Stems* succulent, a foot or more high. *Leaves* varying somewhat in width. *Racemes* long, many-flowered. *Pedicels* short, never reflexed. *Flowers* bluish or inclining to purple.

8. V. *Beccabúnga* L. (*Brooklime*); racemes opposite, leaves stalked elliptical obtuse subserrate glabrous, stem procumbent

at the base and rooting.—*α.* bracteas shorter than the pedicels, flowers bright blue. *E. B.* t. 655.—*β.* bracteas longer than the pedicels, flowers pink or flesh-coloured. V. limosa *Lej.*

Ditches and water-courses, frequent.—*β.* Dalkeith. ♃. 5—9.—Whole plant glabrous and very succulent. *Racemes* many-flowered.

9. V. *officinális* L. (*common S.*); more or less pubescent, racemes spicate, leaves shortly stalked ovate serrate, stem procumbent creeping, capsule obovate triangular truncate or with a wide shallow notch.—*α.* leaves broadly ovate rough with pubescence, stem very downy. *E. B.* t. 765.—*β.* nearly glabrous.—*γ.* small, leaves ovate-lanceolate, capsule obovate entire (abortive). V. hirsuta *Hopk.*: *E. B. S.* t. 2673.

Abundant in woods and pastures, especially in dry situations.—*β.* on mountains in Scotland and Ireland.—*γ.* dry heaths in Ayrshire. ♃. 5—7.—A very variable plant, especially in size. *Leaves* astringent and bitter; hence sometimes used medicinally, and made into tea.

10. V. *montána* L. (*Mountain S.*); racemes lax few-flowered leaves cordate-ovate petiolate serrate, stem hairy all round, capsule orbicular notched at the apex and base flat membranous glabrous ciliated much larger than the calyx. *E. B.* t. 766.

Moist woods, not unfrequent. ♃. 4—7.—*Stem* a foot and more long, weak, trailing. *Leaves* large, on stalks about equal to them in length. *Capsules* large, quite flat, and resembling those of a *Biscutella*, veiny, their edges denticulate and slightly ciliated.

11. V. *Chamæ'drys* L. (*Germander S.*); racemes elongated many-flowered, leaves cordate-ovate nearly sessile inciso-serrate, stem bifariously hairy, capsule flat obcordate deeply notched ciliated shorter than the calyx. *E. B.* t. 623.

Woods, pastures, and hedge-banks, frequent. ♃. 5, 6.—*Stem* procumbent, as in the last species, having two opposite hairy lines, and these lines taking different sides above and below each pair of leaves, or decussate. *Leaves* wrinkled, sometimes deeply cut. *Flowers* large, numerous, very bright blue, greeting us at an early season of the year, and rendering the plant a general favourite; supposed by some to be the true *Forget-me-not.*

**** Root annual.*

† *Flowers axillary, solitary (the floral leaves being similar to the cauline ones). Pedicels recurved. Seeds cupped.*

12. V. *hederifólia* L. (*Ivy-leaved S.*); leaves all petiolate cordate with 5—7 large teeth or lobes, segments of the calyx cordate ciliated, capsule of two turgid lobes, seeds 2—4, stem procumbent. *E. B.* t. 784.

Fields and hedge-banks, common. ☉. 3—8.—*Stem* weak. *Leaves* rather fleshy, slightly hairy, the upper young leaves alone sessile or

nearly so, the terminal tooth or lobe the largest. *Peduncles* longer than the leaves, recurved when bearing fruit. *Ovary* 4-ovuled. *Caps.* of two rounded glabrous lobes, each lobe having 2 (sometimes only 1) large, black, transversely wrinkled, oval, gibbous *seeds*, which are hollowed on the under-side.

13. V. *agréstis* L. (*green procumbent Field S.*); leaves all petiolate cordate-ovate inciso-serrate about as long as the flower-stalks, segments of the calyx somewhat ovate or oblong, stem procumbent, capsule broadly suborbicular of 2 turgid keeled approximated lobes, cells 6—10-seeded.—*α.* sepals oblong obtuse, lower part of the corolla whitish. *Borr. in E. B. S.* t. 2603. —*β.* sepals ovate acute, petals wholly blue. *E. B.* t. 783. V. polita *Fries.*

Fields and waste places, abundant. ⊙. 4—9. — Prostrate. *Stems* 3—4 inches long, slightly hairy. *Fruit* of two round tumid lobes, much smaller than the calyx. *Seeds* large, cupped. *V. agrestis*, *V. polita*, and *V. opaca* Fries (with spathulate sepals) agree in so many points, and differ in so few, and these of a variable nature in the genus, that we agree with Mr. Bentham that they form but one species.

14. *V. *Buxbaúmii* Ten. (*Buxbaum's S.*); leaves all petiolate cordate-ovate inciso-serrate shorter than the flower-stalks, segments of the calyx lanceolate acute when in fruit much divaricated, stem procumbent, capsule obcordate-triangular of two turgid divaricated lobes which are compressed upwards and sharply keeled, cells 8—12-seeded. *E. B. S.* t. 2769.

Fields and cultivated places. Clover-field at Chalk-hole, near Margate; plentiful among turneps in a field adjoining the Bird-in-hand Inn, Burford, Oxfordshire; near Newcastle, along with both varieties of *V. agrestis;* Syderstrand, Norfolk, under a sunny wall. Shrubbery at Whiterig, Berwickshire; near Dunfermline, and near Glasgow. ⊙. 4—9. — This plant is distinguished from *V. agrestis* by its larger size, and greater hairiness, the divaricated lobes of the capsule, which are compressed upwards and sharply carinate, and the larger blue corolla, rivalling in size and beauty that of *V. Chamædrys.*

†† *Flowers spicate or racemose (the upper floral leaves becoming gradually much smaller than the cauline ones). Pedicels erect or nearly so.*

15. V. *arvénsis* L. (*Wall S.*); leaves cordate-ovate serrate the lower ones petiolate, the upper or bracteas sessile lanceolate quite entire longer than the flowers, pedicels shorter than the calyx, capsules broadly obcordate compressed emarginate with roundish ciliated lobes, seeds 12—14 compressed flat on the one side, stem ascending. *E. B.* t. 734.

Fields and walls, plentiful. ⊙. 4—7. — Very different from the last three, especially in its inflorescence, which, if the upper leaves be considered bracteas, as they really are (for they differ both in size and shape from the cauline ones), is truly racemose or subspicate. The

same may be said of the two next species, and of some Continental ones, especially *V. acinifolia.*

16. V. *vérna* L. (*vernal S.*); leaves inciso-pinnatifid, the upper ones or bracteas lanceolate entire, pedicels shorter than the calyx, capsule broadly obcordate compressed emarginate with roundish ciliated lobes, seeds 12—14 thin flat. *E. B.* t. 25.

Very rare. About Thetford, Bury, and Mildenhall, Suffolk. ☉. 4, 5. — A very small, upright, scarcely branching plant, allied to *V. arvensis.*

17. V. *tryphýllos* L. (*blunt-fingered S.*); leaves broadly ovate incised lowermost ones petiolate, upper or bracteas sessile digitate the segments obtuse, pedicels longer than the calyx, capsules obcordate compressed with roundish ciliated lobes, seeds many concave on the one side. *E. B.* t. 26.

Very rare; in sandy fields, about Thetford, Bury, and Mildenhall, Suffolk. Acomb near York. ☉. 4.—*Stem* 3—4 inches high, with spreading branches. *Flowers* a very deep blue, the lowermost often on much elongated pedicels.

B. *Stamens* 4, *and usually didynamous* (*in British species*). (Gen. 2—12.)

2. Bártsia[1] *Linn.* Bartsia.

Cal. tubular, mostly coloured, 4-cleft. *Cor.* ringent with a contracted orifice; upper *lip* arched, entire or emarginate; lower one in 3 equal reflexed lobes. *Anthers* mostly hairy, cells mucronate at the base. *Caps.* ovate-oblong, compressed, with 2 cells and many *seeds.*—Named in honour of *John Bartsch*, a Prussian botanist, and friend of Linnæus, who died at Surinam.

1. B. *alpína* L. (*alpine B.*); stem erect hairy, leaves opposite ovate obtusely serrate, upper ones cordate-amplexicaul, flowers in a terminal short leafy spike, anthers hairy. *E. B.* t. 361.

Rocky alpine pastures; rare. Near Orton, Westmoreland; Middleton Teesdale, on the Yorkshire and Durham sides of the river. Meal-ghyrdhy, Meal-cuachlar, and Ben Lawers, in Breadalbane; Scotland. 4. 6—8.—*Stems* about a span high, simple, several from the same root. Upper *leaves* or *bracteas* often tinged with purple. *Flowers* large, deep purplish-blue, downy; *lips* of equal length.

[1] Mr. Bentham and others have lately divided this genus into several, which we do not consider necessary to adopt in a local flora, where we have only one representative of each: they are—
1. Bartsia. Seeds numerous, transverse, longitudinally ribbed or winged. (B. *alpina.*)
2. Eufrasia. Seeds very numerous and minute, scarcely striated under a lens. (B. *viscosa.*)
3. Odontites. Seeds numerous, pendulous. (B. *Odontites.*)
The last has been united to *Euphrasia* by Mr. Babington.

2. B. *viscósa* L. (*yellow viscid B.*); leaves lanceolate inciso-serrate, upper ones alternate, flowers solitary axillary distant, lower lip large with two tubercles, anthers hairy. *E. B.* t. 1045.

Pastures, in many places in the West of England and Wales, and South-west of Scotland and South of Ireland. Jersey. ⊙. 6—10. —*Flowers* yellow, handsome.

3. B. *Odontítes* Huds. (*red B.*); leaves linear-lanceolate remotely serrate, upper ones (or bracteas) alternate, flowers in unilateral racemes, anthers nearly glabrous, stem branched erect scabrous pubescent. —*α.* leaves attenuate at the base, calyx-segments lanceolate as long as the tube, filaments and stigma hairy, capsule oblong. *E. B.* t. 1415. —*β.* leaves broader at the base, calyx-segments broadly triangular one half the length of the tube, filaments and stigma nearly glabrous, capsule broadly oval almost rounded. — Odontites rotundata *Ball in Ann. Nat. Hist.* 2nd ser. iv. p. 30.

Corn-fields and waste places, frequent. *β.* Sussex and Cambridgeshire. ⊙. 6—8. — *Racemes* many, long, erect. *Flowers* reddish-purple, pubescent. *Anthers* connected together by a few hairs, and having a few glands or clavate hairs along the connectivum at the back, otherwise glabrous. We have seen no specimens of *var. β.*, but it does not seem to differ in any essential points from the more common forms.

3. Euphrásia *Linn.* Eye-bright.

Cal. tubular, 4-cleft. Upper *lip* of the *cor.* 2-lobed, the lobes broad; lower one of 3 nearly equal lobes. Cells of the *anthers* mucronate at the base. *Caps.* ovate-oblong, compressed, 2-celled, many-seeded. *Seeds* pendulous, longitudinally ribbed. — Name: ευφρασια, joy (from ευ, *well*, and φρην, the *mind*), in allusion to its properties.

1. E. *officinális* L. (*common E.*); leaves ovate deeply toothed, corolla glabrous, lobes of the lower lip emarginate. *E. B.* t. 1416.

Pastures in the plains and on the mountains, abundant. ⊙. 5—9. — *Stem* varying from 1 inch, with often only a single flower, to 6 and 8 inches, in the Highland pastures, where it becomes very much branched. *Flowers* axillary, but crowded at the extremities of its branches, white or reddish, streaked with purple.

4. Rhinánthus *Linn.* Yellow-rattle.

Cal. inflated, 4-toothed. Upper *lip* of the *cor.* compressed laterally, entire, furnished on both sides below the apex with a straight tooth-like appendage or lobe; lower one plane, 3-lobed. *Ovary* with many *ovules*. *Caps.* of 2 cells, obtuse, compressed. *Seeds* imbricated, flat and usually margined. — Named

from ῥὶν, a *nose*, and ἄνθος, a *flower*; in allusion to the beaked upper lip of the corolla, which is very remarkable in the *R. Elephas.*

1. R. *Crista-Gálli* L. (*common Y.*); leaves oblong-laceolate serrate, flowers in lax spikes, calyx glabrous, appendages of the upper lip of the corolla short roundish, bracteas ovate. *E. B.* t. 657. R. glaber *Lam.* R. minor *Ehrh.*

Meadows and pastures, abundant. ⊙. 5—7. — *Stem* 1—2 ft. high, glabrous, often much branched and more or less spotted with purple. *Leaves* veiny, somewhat blunt or only acute. *Flowers* axillary in the upper leaves or *bracteas*, and hence loosely spiked. The *appendages* of the upper lip of the *corolla* are broader than long, bluish. *Bracteas* green throughout, acute, but not with an elongated point. When the fruit is ripe, the *seeds* rattle in the husky capsule, and indicate to the Swedish peasantry the season for gathering in their hay.

2. R. **májor* Ehrh. (*hairy Y.*); leaves oblong-lanceolate serrate, flowers in crowded spikes, calyx hairy, appendages of the upper lip of the corolla ovate, bracteas ovate. R. hirsutus *Lam.* R. villosus *Pers.* R. Crista-Galli *var.* β. *L.*

Meadows and pastures. ⊙. 7, 8. — Of this we have no British specimens. It is mentioned as a native of England by Mr. Bentham; but that Botanist refers to the figure in *E. B. S.* t. 2737, which we consider to belong without doubt to the next. The leaves of the present species are precisely as in the last: we have never seen it with the calyx glabrous. Although small specimens may occur, it is usually the largest and stoutest of the genus.

3. R. *angustifólius* Gmel. (*large bushy Y.*); leaves linear-lanceolate, upper ones especially acuminated, flowers in crowded spikes, calyx glabrous, appendages of the upper lip of the corolla ovate or oblong, bracteas ovate acuminate. R. major *Sm.*; *E. B. S.* t. 2737.

Corn-fields in the north of England. ⊙. 7, 8. — Mr. Backhouse observes that the present plant has denser and more bushy *spikes* than *R. Crista-Galli*, and yellowish *bracteas*, each terminated by an elongated green point. The upper leaves are much acuminated from a lanceolate base. The appendages of the upper lip of the *corolla* are wedge-shaped, purple, usually longer than broad; the *germen* is narrower, and more tumid. The *seeds* are thick at the edge, with a membranous margin, which is variable in breadth, sometimes almost wanting.[1]

5. Melampýrum *Linn.* Cow-wheat.

Cal. tubular, 4-toothed. Upper *lip* of the *cor.* laterally compressed, turned back at the margin; lower *lip* trifid. *Ovary* with 2 superposed *ovules* in each cell. *Caps.* oblong, 2-celled,

[1] Mr. Bentham observes to us that now, since it has been proved that this genus is parasitical, it is probable that all the supposed species ought to be united; an opinion in which we quite agree.

obliquely acuminate, opening on one side. *Cells* 1—2-seeded. *Seeds* oblong, even (not striate), gibbous at the base.— Named from μελας, *black*, and πυρος, *wheat*. Its seeds resemble grains of wheat, and are said, when mixed with flour, to make the bread black.

1. M. *cristátum* L. (*crested C.*); spikes densely imbricated 4-sided, bracteas cordate acuminated finely ciliato-dentate. *E. B.* t. 41.

Woods, thickets, and sometimes in corn-fields, chiefly in Norfolk, Cambridgeshire, Bedfordshire, and Huntingdonshire. ☉. 7. — A beautiful plant, as is the following. *Leaves* lanceolate, acuminate, entire. *Bracteas* rose-coloured at the base. *Flowers* yellow, purple within the upper lip, solitary in the axil of each bractea or floral-leaf, as in all the rest of the genus.

2. M. *arvénse* D. (*purple C.*); spikes oblong lax bracteas ovate-lanceolate attenuate pinnatifid with subulate segments, teeth of the calyx much longer than the tube, lips of the corolla closed. *E. B.* t. 53.

Corn-fields and dry gravelly banks, rare. Near Norwich. Isle of Wight. ☉. 6—8. — Spikes of *flowers* much larger than in the preceding, and exceedingly handsome, from the bright varied colours, yellow, purple, rose-colour, and green, of the blossoms and *bracteas*: the latter have elevated glandular points beneath. *Cal.* hispid, as long as the tube of the *corolla*.

3. M. *praténse* L. (*common yellow C.*); flowers axillary secund, leaves in distant pairs, corolla 4 times as long as the calyx closed, the lower lip straight. — *α*. leaves glabrous, upper bracteas 1—2-toothed at the base. *E. B.* t. 113. — *β*. smaller and somewhat succulent, leaves glabrous, bracteas quite entire. M. montanum *Johnst. Fl. of Berw.* — *γ*. leaves hispid, bracteas with diverging and declining teeth at the base.

Groves and thickets (not in meadows, as the name would imply), frequent. *β*. Mountains. *γ*. Banks of the Wye below Monmouth. ☉. 5—8. — *Stem* 1 ft. or more high, slender, with straggling opposite branches. *Flowers* large, pale yellow : lower lip nearly straight (not deflexed), and the palate is raised so as to close the mouth of the tube.

4. M. *sylváticum* L. (*lesser-flowered yellow C.*); flowers axillary secund, leaves in distant pairs, corolla scarcely twice as long as the calyx open, the lips equal in length, lower one deflexed, bracteas quite entire. *E. B.* t. 804.

Alpine woods. Rare in the north of England. More general, but very local in Scotland; in several parts of Perthshire; Auchindrane, woods on the Doune, Craigs of Ness, Ayrshire, &c. ☉. 7. — *Stem* 1 ft. high. *Bracteas* always entire. *Cor.* deep yellow, very small, quite unlike that of the preceding species.

6. Pediculáris *Linn.* Louse-wort.

Cal. inflated, 5-cleft, or unequally 2—3-lobed, jagged, somewhat leafy. Upper *lip* of the *cor.* laterally compressed, arched; lower one plane, 3-lobed. *Ovary* with many ovules. *Caps.* oblique, acute, compressed, 2-celled. *Seeds* angular. — Name derived from its supposed property of producing the lousy disease in sheep that feed upon it, a malady which rather arises from the wet pastures where such plants grow.

1. P. *palústris* L. (*Marsh L.*); stem solitary branched upwards erect, calyx broadly ovate hairy ribbed with crenate nearly equal lobes. *E. B.* t. 399.

Wet and marshy pastures. ⊙ or 2 ? 5—9. — *Stem* 1 ft. high, with many lateral branches. *Leaves* some or all of them opposite, pinnate; *pinnæ* ovate, almost pinnatifid. *Cal.* slightly hairy on the outside, nearly glabrous within, not inflated, spotted. *Cor.* crimson; upper lip with a projecting tooth on each side below the middle, truncated and with a tooth at the apex on each side, lower one fringed. The two *anterior stamens* hairy to near the base, hairs moniliform; two posterior ones glabrous.

2. P. *sylvática* L. (*Pasture L.*); stem branched from the base and spreading, calyx oblong angular glabrous in 5 unequal crenate and almost leafy segments. *E. B.* t. 400.

Moist pastures and heaths, common 2. 4—7. — *Stems* 3—5 inches long. *Leaves* alternate, lower ones pinnatifid, the rest pinnate with deeply serrated *pinnæ*. *Cal.* quite glabrous on the outside, woolly within at the mouth, inflated, reticulated with green veins. *Cor.* rose-coloured (or white); upper lip without any projecting tooth about its middle, truncate and with a tooth at the apex on each side; lower one not fringed. The two *anterior stamens* have many moniliform hairs near the apex: two *posterior* ones glabrous or scabrous.

[*Mimulus luteus* W. is now naturalised in many boggy places.]

7. Scrophulária *Linn.* Figwort.

Cal. 5-lobed (or in *S. vernalis* deeply 5-cleft). *Cor.* subglobose, its *limb* contracted with 2 short *lips*; the upper with 2 straight lobes, and frequently a small *scale* or abortive stamen within it; the lower 3-lobed, the two lateral lobes straight, middle one decurved. *Caps.* 2-celled, 2-valved, septicidal, the margins of the valves turned inwards. — Named from the *Scrofula*, the roots of some species resembling scrofulous tumours, which they were therefore in the dark ages of medical knowledge supposed to cure.

* *Calyx with 5 rounded lobes. Cor. purplish, the two upper lobes longer than the two lateral ones: upper lip with a scale.*

1. S. *nodósa* L. (*knotted F.*); leaves cordate-triangular acute

glabrous doubly and acutely serrate, lower serratures largest, stem with 4 acute angles, cymes lax, bracteas small lanceolate acute, sepals with a narrow membranous margin, scale of upper lip transversely oblong slightly notched, root tuberous. *E. B.* t. 1544.

Woods and moist grounds, frequent. ♃. 6—8. — *Root* large, thick and knotty. *Stem* 2—3 ft. high. *Flowers* greenish-purple.

2. S. *Ehrhárti* C. A. Stev. (*Ehrhart's F.*); leaves ovate-lanceolate acute subcordate glabrous sharply serrate, lower serratures smaller, petioles winged, stem 4-winged, cymes lax 4—8-flowered, sepals with a broad membranous margin, scale of upper lip bifid with diverging lobes, capsule obtuse, root fibrous. *E. B. S.* t. 2875.

Wet places. Wilmington, Sussex; Primrose Hill, Middlesex; Preston, Lancashire; Settle, Yorkshire. Berwick-upon-Tweed; Cramond Bridge and Pentland Hills, near Edinburgh. ♃. 7—9. — *Stem* 2—4 ft. high, decidedly winged at the angles, on which account the plant had been long supposed, both in Germany and Scotland, to be *S. aquatica*, although much more allied to *S. nodosa*.

3. S. *aquática* L. (*Water F.*); glabrous, leaves crenate-serrate cordate-oblong obtuse, petioles winged, stem 4-winged, cymes dense corymbose 8—15-flowered, bracteas linear obtuse, sepals with a broad membranous margin, scale of upper lip roundish uniform entire, capsule pointed, root fibrous. *E. B.* t. 854.

Sides of rivers, and in wet places. ♃. 6—9. — *Stem* 3—4 ft. high. *Panicles* terminal, bracteated, with remote branches. *Flowers* dark purple, occasionally white.

4. S. *Scorodónia* L. (*Balm-leaved F.*); downy, leaves cordate, triangular with large double serratures, stem bluntly 4-angled, cymes lax few-flowered, bracteas leaflike, sepals with a membranaceous margin, scale of upper lip roundish entire. *E. B.* t. 2209.

Moist places, only in the extreme south and south-west of England, and at Tralee in Ireland. Jersey. ♃. 7. — Distinguished from all the preceding by being downy, and by its wrinkled *leaves*, which have large teeth, or serratures, and these are again serrate: it resembles *S. Ehrharti* in the leaves which accompany the *panicle*. *Flowers* dull purple.

** *Calyx with 5 deep, acute segments. Cor. yellow; the two upper segments of the cor. about equal to the two lateral ones; scale of the upper lip wanting.*

5. S. **vernális* L. (*yellow F.*); hairy leaves broadly cordate doubly inciso-serrate acute, cymes axillary corymbose, bracteas leafy, sepals without a membranous margin, stamens protruded. *E. B.* t. 567.

Road-sides and waste places, in many parts of England and Scotland, but nowhere general, and always in doubtfully wild situations. ♃. 4—6. — Very different from all the preceding, and, as Sir James E. Smith has well observed, exhibiting a great affinity with the pretty American genus *Calceolaria*. *Styles* and *stamens*, which latter arise from the base of the yellow *corolla*, protruded from its very contracted mouth.

8. Digitális *Linn.* Foxglove or Folks-glove.

Cal. in 5 deep segments. *Cor.* campanulate, inflated beneath; *limb* obliquely 4—5-lobed, unequal. *Caps.* ovate, 2-celled, many-seeded, 2-valved. septicidal. — Name: *digitale*, the *finger of a glove*, which its flowers resemble. Hence, *Foxglove* in English, and *doigts de la Vierge*, *gants de Notre Dame*, &c., in French; *meuran-nam-ban-sìth*, in Gaelic.

1. D. *purpúrea* L. (*purple F.*); sepals ovate-oblong acute 3-nerved downy, corolla obtuse scabrous externally, upper lip scarcely divided, lower one with ovate rounded segments, leaves ovate-lanceolate crenate or serrate downy. *E. B.* t. 1297.

Dry banks, pastures, walls, &c., in hilly and especially in subalpine and rocky countries; almost unknown in the more eastern parts of England, such as Norfolk and Suffolk. ♃. 5—8. — The most stately and beautiful of our herbaceous plants; and one that has obtained great reputation as a medicine. Three to four feet high. *Leaves* large, veiny. *Spikes* very long, of numerous, drooping, purple (or rarely white), *flowers*, spotted within. Dr. Bromfield found a curious *var.* with a spurred corolla in the Isle of Wight.

9. Antirrhínum *Linn.* Snapdragon.

Cal. 5-partite. *Cor.* personate, gibbous at the base (no evident spur); its *mouth* closed by a projecting palate. *Caps.* 2-celled, oblique, opening by 2—3 pores at the extremity. — Name: *αντι, in comparison with*, *ῥυ, a nose*, *muffler*, or *mask*; from the appearance of the flowers.

1. A. **május* L. (*great S.*); leaves lanceolate alternate those of the branches opposite, flowers spiked, segments of the calyx ovate obtuse much shorter than the corolla, upper lip of corolla bifid. *E. B.* t. 129.

Old walls and chalk-hills, frequently the outcast of neighbouring gardens. ♃. 7—9. — One to two feet high. *Flowers* very large, mostly purplish-red, but often varying to white.

2. A. *Orontium* L. (*lesser S.*); leaves mostly alternate linear-lanceolate, spikes very few-flowered lax, segments of the calyx linear longer than the corolla. *E. B.* t. 1155.

Corn-fields in a dry soil, in many parts, especially of the east and south of England. ☉. 7—10. — *Flowers* purple, remarkable for the great length of the *calyx-segments*, particularly after flowering.

10. Linaria *Juss.* Toadflax.

Cal. 5-partite. *Cor.* personate, spurred at the base; its *mouth* closed by a projecting palate. *Caps.* ventricose, 2-celled, opening by valves or teeth. — Named from *Linum*, *flax*, which the leaves of some species resemble.

* *Stems and branches trailing. Pedicels axillary, elongated.*

1. L. **Cymbalária* Mill. (*Ivy-leaved T.*); leaves cordate 5-lobed palmate-nerved alternate glabrous, stems trailing. Antirrhinum *L.*: *E. B.* t. 502.

On old walls, in many places; the outcast of gardens. ♃. 5—9. — *Stem* very long, filiform. *Leaves* petioled, often purple beneath. *Flowers* small, pale blue, or purplish.

2. L. *spúria* Mill. (*round-leaved T.*); leaves ovate downy feather-nerved mostly alternate, branches trailing, peduncles hairy, cor. with a subulate curved spur. Antirrhinum *L.*: *E. B.* t. 691.

Sandy corn-fields, mostly confined to the east and south-east of England. Abundant in many parts of Norfolk and Suffolk. Bristol. ☉. 7—11.—*Flowers* small, yellowish; upper *lip* purple. *Cal.* large; segments ovate-lanceolate, the outer ones, sometimes all, cordate at the base.

3. L. *Elátine* Desf. (*sharp-pointed Fluellen*, or *T.*); leaves broadly hastate acute feather-nerved, lowermost ovate opposite, branches trailing hairy, peduncles glabrous, cor. with a subulate straight spur. Antirrhinum *L.*: *E. B.* t. 692.

Corn-fields in a dry, gravelly, or chalky soil, England. ☉. 7—11. — Similar to the last, yet distinct, smaller in all its parts. *Sepals* lanceolate, very acute never cordate.

** *Stems erect, descending or diffuse.*

4. L. *répens* Ait. (*creeping pale-blue T.*); glabrous, leaves linear whorled or scattered, flowers racemose, sepals lanceolate glabrous the length of the spur but shorter than the capsule, seeds angular transversely wrinkled, stems erect. Antirrhinum *L.*: *E. B.* t. 1253. Lin. striata *D C.*

Chalky banks and rocky places near the sea, rare; principally in the south of England, South Wales, and Ireland. Naturalized near Colzean, Ayrshire, and Musselburgh, Scotland. ♃. 7—9. — *Stems* 1 to 1½ foot high, slender, branched. *Leaves* somewhat whorled, below, but there soon dying away. *Flowers* in panicled *racemes*, whitish or pale violet, with darker violet lines; *palate* yellow. (Between this and the next species hybrids are occasionally formed in Hants and Cornwall: those which have the seeds of the next, yellow flowers, and intermediate sepals, have been called *L. Bauhini* and *L. Italica* by British collectors. The true *L. Italica* is itself connected with *L. repens* by several intermediate forms.)

5. L. *sépium* Allm. (*Hedge T.*); creeping, stems erect glabrous, leaves linear-lanceolate acute scattered, flowers racemose, sepals ovate acute glabrous shorter than the spur and about as long as the capsule, seeds tubercular scabrous with three wings. *Bab. in Ann. Nat. Hist.* xiv. (2d ser.), p. 409.

Near the river at Bandon, Cork. ♃.—With this we are not acquainted, and take our character from the above work. The spur and gray upper lip of the corolla is streaked with pale purple lines. To us it appears to be intermediate or a fertile hybrid between the last and next species; the present "total absence of *L. vulgaris* from the neighbourhood" does not of itself establish its claims to specific distinction.

6. L. *vulgáris* Mœnch (*yellow T.*); glabrous, leaves linear-lanceolate scattered crowded, flowers racemose imbricated, sepals ovate acute glabrous shorter than the capsule or spur, seeds tubercular-scabrous surrounded by a smooth wing, stems erect. Antirrhinum Linaria *L.*: *E. B.* t. 658.

Borders of corn-fields, and in hedges, abundant. ♃. 7—10.—One to two feet high, glaucous. *Flowers* large, yellow. *Rachis* and *peduncles* usually glandular-hairy, sometimes glabrous. Dr. Bromfield found a variety with broad leaves in the Isle of Wight, which appears to be the *L. speciosa* Ten. A remarkable but not very uncommon monstrosity is the "*Peloria var.*" (figured in *E. B.* t. 260), having 5 spurs and 5 usually imperfect stamens.

7. L. *Pelisseriána* D C. (*upright purple T.*); glabrous erect, leaves linear upper ones alternate, lower ones verticillate, those of the sterile shoots ternate and broader, flowers at first in short racemes, pedicels as long as the bracteas, sepals linear acute twice as long as the capsule much shorter than the spur of the corolla, seeds nearly flat surrounded by a fringed wing, tuberculate on one side, smooth on the other. *E. B. S.* t. 2832.

On a hill-side, growing amongst *Ulex Europæus*, between St. Peter's barracks and a water-mill near St. Ouen's Pond, Jersey. ☉. 6.—*Flowering-stems* 6 inches to 1 foot high, nearly simple, one or more from each root. *Flowers* purple, with dark veins. The *seeds* are a beautiful microscopic object.

8. L. **supína* Desf. (*diffuse T.*); diffuse or ascending with the inflorescence glandular-hairy but otherwise glabrous, leaves linear blunt, upper ones alternate, lower verticillate, sepals linear or linear-spathulate shorter than the capsule or spur about as long as the corolla, seeds nearly flat surrounded by a striate wing.—Antirrhinum *L.*: L. maritima *D C.* L. Pyrenaica *D C.*

Near Plymouth, Devon, and Poole, Dorset (supposed to have been brought with ballast from Rouen). Newcastle upon Tyne (among ballast). Hayle and St. Blaize bay, Cornwall (perhaps also introduced). ♃. 7, 8. — *Stem* much branched at the base, only a few

inches high. *Flowers* at first in short racemes, yellow, the throat and spur usually with purple lines. We have not seen British specimens.

9. L. *mínor* Desf. (*least T.*); leaves linear-lanceolate obtuse, mostly alternate glandular pubescent, flowers solitary axillary, pedicels three times as long as the calyx which is longer than the spur, segments of the upper lip of the corolla diverging, seeds oblong furrowed, stem erect much branched. *E. B.* t. 2014.

Sandy fields, principally in the eastern and south-eastern parts of England. Rare in Scotland: near Glasgow; Aill Water, Roxburghshire. At Sunday's well in Ireland. ⊙. 5—10. — *Stems* 4—10 inches high, with purplish-yellow *flowers.*

[The Neapolitan *Linaria purpurea* Mill. (Bot. Mag. t. 99) is given in the *New Bot. Guide* as being found at Redland, near Bristol, by *Miss Worsley.* Of course it is the outcast of a garden.]

11. Limoséllа *Linn.* Mudwort.

Cal. campanulate, 5-cleft, equal. *Cor.* shortly 5-cleft, campanulate, equal. *Stam.* 4, nearly equal. *Anthers* 1-celled. *Stigma* capitate. *Caps.* globose, 2-valved, with a central placenta which is free above and connected below with a thin dissepiment, ultimately 1-celled. — Named from *limus*, *mud*, the plant growing in muddy places.

1. L. *aquática* L. (*common M.*); leaves lanceolate spathulate on long stalks, segments of the corolla oval-oblong much shorter than the tube of the calyx. *E. B.* t. 357.

Muddy places, and where water has stood, in several parts of England, Scotland, and Ireland, but often overlooked on account of its small size. ⊙. 7—9. — *Root* creeping, filiform, throwing up clusters of glabrous *leaves* one or two inches long including their petiole. *Flowers* minute, peduncled, arising from the base of the *leaf-stalks*, resembling *scapes* which are shorter than the petioles. *Cor.* pale rose-colcured. *Anthers* purplish-blue. *Seeds* with a furrow on the back and numerous transverse striæ.

12. Sibthórpia *Linn.* Sibthorpia. Money-wort.

Cal. in 4—8 deep spreading segments. *Cor.* sub-rotate, of as many segments as the calyx or with an additional one. *Stam.* as many as the segments of the corolla, or one fewer. *Anthers* sagittate, 2-celled. *Stigma* dilated. *Caps.* membranaceous, compressed, 2-celled, 2-valved, loculicidal. — Name given in honour of *Dr. Humphrey Sibthorpe*, the successor of Dillenius in the botanical chair at Oxford. (As here defined, the genus includes *Disandra* Linn.)

1. S. *Europæ'a* L. (*creeping S.*, or *Cornish M.*); hairy, leaves 7—9-lobed, pedicels very short, flowers minute 5-cleft, stamens 4, capsules broad retuse. *E. B.* t. 649.

Moist shady places, in Devonshire, Cornwall, and the Scilly Isles. By the stream running from Waldron Down, Sussex; near Nettlecombe, Somerset. Jersey and Guernsey. At Connor hill near Dingle; and near Brandon, Ireland. ♃. 7, 8. — A graceful little plant, hairy, with creeping filiform *stems*, and alternate orbicular-reniform broadly crenate *leaves*. *Flowers* axillary, solitary, on short stalks; the two lowermost segments of the *corolla* yellowish, the three upper broader and pink.

C. *Stamens* 5. (Gen. 13.)

13. Verbáscum *Linn.* Mullein.

Cal. 5-partite. *Cor.* rotate, irregular. *Stam.* 5, the three upper or all of them hairy. *Caps.* of 2 cells and 2 valves, septicidal. — Name altered from *Barbascum*, from *barba*, a *beard;* in allusion to the shaggy nature of its foliage.

* *Anthers of the longer glabrous stamens more or less decurrent on one side on the filaments. Raceme spiked, dense, nearly sessile. Leaves decurrent, woolly.*

1. V. *Thápsus* L. (*great M.*); stem simple, leaves all decurrent woolly on both sides, spike of flowers very dense, pedicels shorter than the calyx, corolla concave in the throat about twice as long as the calyx, 2 stamens longer glabrous their anthers very shortly decurrent. *E. B.* t. 549.

Banks and waste ground, in a light sandy, gravelly, or chalky soil. ☉. 6—8. — *Stem* nearly simple, 4—5 feet high, angular, winged. *Leaves* thick, excessively woolly, ovate or oblong. *Spike* long, cylindrical. *Flowers* handsome, golden-yellow; when dried in the sun, giving out a fatty matter used in Alsace as a cataplasm in hæmorrhoidal complaints. Three of the *stamens* with white woolly hairs; the two longer ones glabrous.

2. V. **thapsifórme* Schrad. (*Thapsus-like M.*); stem simple, leaves decurrent woolly on both sides, raceme spiked dense, 2 stamens longer glabrous their anthers much decurrent, corolla flat about 4 times as long as the calyx. V. thapsoides *Huds.?* V. Thapsus *Mey. Koch.*

Everywhere in Kent; *Huds.* ☉. 7, 8. — The foreign plant is closely allied to the last, but readily distinguished by the corolla and anthers of the long stamens. As to the British species it rests wholly on Hudson's authority, and Mr. Griffith states that the *V. thapsoides* Huds. has frequently been produced in his garden by the pollen of *V. Thapsus* falling upon the stigma of *V. Lychnitis* (Bot. Guide i. p. 169.)

** *Anthers of the longer stamens more or less decurrent on one side on the filaments which are hairy on the inside. Flowers solitary, or 2—6 together. Leaves glabrous or glandular-hairy, sessile; upper ones semiamplexicaul or slightly decurrent.*

3. V. **Blattária* L. (*Moth M.*); leaves crenate oblong gla-

brous, radical ones sinuate, upper ones acuminate, flowers solitary stalked remote collected into an elongated branched glandular-hairy raceme, pedicels much longer than the calyx. *E. B.* t. 393.

Banks in a gravelly soil, rare. In several places in Kent, Devonshire and Cornwall. ☉. 6—10. — Hairs of the *filaments* purple.

4. V. *virgátum* With. (*large-flowered Primrose-leaved M.*); slightly glandular hairy except the sometimes glabrous leaves, leaves ovate-lanceolate toothed, radical ones sinuate-lyrate, pedicels 2—6 or rarely solitary mostly shorter than the calyx. *E. B.* t. 550.

Fields and by road-sides, rare. Torpoint, Cornwall; Plymouth; Surrey; Worcester; Lincoln; Wombourne, Staffordshire; Herts; Norfolk; Shropshire; Hereford; Wrexham, Denbighshire; Glamorganshire. ♂. 8. — Perhaps as suggested by Mr. Bentham, a mere var. of the last.

**** Anthers not decurrent on the filaments, which are equal and all woolly. Racemes branched, panicled. Leaves woolly or pulverulent especially beneath, not decurrent.*

5. V. *pulveruléntum* Vill. (*yellow hoary M.*); leaves ovate-oblong subserrate pulverulento-tomentose on both sides, lower ones oblong-elliptical attenuated into a stalk, upper ones sessile or cordato-amplexicaul, stem rounded panicled above with spreading branches, filaments all woolly (with white hairs). *E. B.* t. 487. V. floccosum *W. et K.*

Road-sides on a gravelly or chalky soil; frequent in Norfolk, Suffolk, Surrey, and Hants. Den near Cullen, Scotland. ♂. 7. — Remarkable for the mealy down on the *leaves*, which is easily removed from the surface. *Flowers* large, handsome. "If the plant be struck suddenly and violently, the expanded corollas will in a short time fall off, and the calyx will close over the germen." (*Sm.*) There were doubts at one time about this being the plant of Villars, from hybrids being generally preserved under that name, and probably sometimes mistaken for it by Villars himself; but, as observed by Mr. Bentham, the description of Villars indicates the English plant.

6. V. *Lychnítis* L. (*white M.*); leaves crenate nearly glabrous above woolly and pulverulent beneath, lower ones elliptic-oblong wedge-shaped stalked, upper sessile ovate-acuminate with a rounded base, stem angular and panicled with ascending branches, filaments all woolly (with white hairs). *E. B.* t. 58.

Road-sides, pastures, and fields, especially in a chalky soil. On clayslate near Truro. ♂. 7, 8. — *Flowers* numerous, rather small, cream-coloured (often yellow in the Isle of Wight). *Leaves* very woolly below. *Stamens* hairy.

7. V. *nígrum* L. (*dark M.*); leaves crenate nearly glabrous above tomentose or pubescent beneath, lower ones cordate-oblong on long stalks, upper cordate-ovate subsessile, raceme

elongated, pedicels twice as long as the calyx, sepals lanceolate-subulate, stem angular above, filaments all woolly (with bright purple hairs). *E. B.* t. 59.

Banks and way-sides, particularly in a gravelly or chalky soil, in the middle and south of England (only naturalized in the north of England and Scotland). ♃. 6—10. — *Leaves* nearly glabrous, dark green. *Flowers* fascicled, many together, on the almost simple long *raceme*. *Corolla* rather large, yellow.

[Besides the above, *V. phœniceum* L. (*V. ferrugineum* Andr.) and *V. phlomoides* L. have been mentioned as natives, but they are plants only of a more southern clime.]

Ord. LXIII. LABIATÆ *Juss.*

Calyx tubular. *Corolla* monopetalous, hypogynous, mostly irregular. *Stamens* 4, mostly didynamous, 2 sometimes sterile or wanting. *Ovary* 1, deeply 4-lobed; *style* arising from between the lobes, near their base. *Stigma* 2-lobed. *Achenes* 4, enclosed in the calyx. *Seed* solitary, erect. *Embryo* erect. *Albumen* 0. — Leaves *opposite*. Stems *square*. — An extensive and eminently natural Order, abounding in essential oil, camphor, and bitter extractive: many of the individuals are therefore employed medicinally.

A. *Stamens* 2.

1. Lycopus. Cal. 5-cleft. Limb of corolla nearly equal.
2. Salvia. Cal. 2-lipped. Cor. labiate.

B. *Stamens* 4.

I. *Stamens diverging, nearly equal, longer than the nearly regular* 4—5*-cleft cor.*

3. Mentha. Tube of the cor. scarcely longer than the calyx.

II. *Stamens diverging, nearly equal, longer than the somewhat* 2*-lipped cor.*

4. Thymus. Flowers in whorls or capitate.
5. Origanum. Flowers in spikes or heads, with imbricated bracteas.

III. *Stamens ascending, parallel, didynamous. Cor. irregular; upper lip short or nearly wanting, shorter than the stamens.*

6. Teucrium. Cal. tubular, 5-toothed. Upper lip of cor. bipartite.
7. Ajuga. Cal. ovate, 5-cleft. Upper lip of cor. entire or emarginate.

IV. *Stamens didynamous. Cor. obviously* 2*-lipped; upper lip longer than the stamens.*

* *Cal. equal or oblique, not obviously* 2*-lipped.*

† *Cal.* 5*-toothed. Stamens longer than the tube of the cor.*

‡ *The two anterior or lower stamens the longest.*

8. Ballota. Cal. salver-shaped, 10-ribbed. Anther-cells spreading.
9. Leonurus. Cal. tubular, 5—10-ribbed. Anther-cells nearly parallel.

10. GALEOPSIS. Cal. campanulate. Anther-cells opposite, bursting transversely by two valves.
11. GALEOBDOLON. Cal. campanulate. Anthers glabrous; the cells diverging, bursting longitudinally. Lobes of lower lip of the cor. about equal. Achenes truncate.
12. LAMIUM. Cal. campanulate. Anthers hirsute; the cells diverging, bursting longitudinally. Lateral lobes of lower lip of cor. obsolete or toothlike, middle one bifid. Achenes truncate.
13. BETONICA. Cal. ovate. Anther-cells parallel, bursting longitudinally. Middle lobe of lower lip of cor. nearly entire, longer than the lateral spreading lobes.
14. STACHYS. Cal. campanulate. Anther-cells diverging, bursting longitudinally. Middle lobe of lower lip of cor. nearly entire, larger than the lateral reflexed lobes.

‡‡ *The two posterior or upper stamens the longest. Cal.* 15-*ribbed.*

15. NEPETA. Upper lip of the cor. straight, emarginate or bifid.

†† *Cal.* 10-*toothed. Stamens included within the tube of the cor.*

16. MARRUBIUM. The two anterior or lower stamens the longest.

** *Cal. obviously* 2-*lipped.*

† *Stamens diverging.*

17. CALAMINTHA. Upper lip of the cor. straight, nearly flat; tube straight.
17a. MELISSA. Upper lip of the cor. concave; tube curved upwards.

†† *Stamens ascending, parallel.*

18. MELITTIS. Cal. campanulate, veined, spreading in fruit.
19. PRUNELLA. Cal. ovate, closed in fruit; upper lip 3-toothed, lower bifid.
20. SCUTELLARIA. Cal. ovate, closed in fruit; lips entire, upper one with a concave scale at the back.

A. *Stamens* 2. (Gen. 1, 2.)

1. LYCOPUS *Linn.* Gipsy-wort.

Cal. tubular, 5-cleft. *Cor.* tubular; *limb* nearly equal, 4-cleft, upper segments broader and notched. *Stam.* 2, diverging, simple, with sometimes 2 sterile ones. — Name: from λυκος, a *wolf*, and πους, a *foot*; from a fancied resemblance in the cut leaves of this plant to a wolf's paw, *der Wolfsfuss*, in Germ., — in English, *Gipsy-wort*, because the plant yields a black dye which is employed by gipsies to render their skins darker.

1. L. *Europæ'us* L. (*common G.*); leaves deeply and irregularly pinnatifid-serrate, rudiments of the sterile stamens minute, achenes about as long as the calyx-tube. *E. B.* t. 1105.

Ditches and river-banks; less frequent in Scotland. ♃. 6—9. — *Stems* 2 ft. high. *Leaves* opposite, nearly sessile, ovate-lanceolate,

wrinkled, very deeply sinuate-serrate, almost pinnatifid. *Flowers* small, sessile, in dense *whorls* at the base of the superior leaves, whitish with purple dots, hairy within.

2. SÁLVIA *Linn.* Sage *or* Clary.

Cal. 2-lipped, tubular. *Cor.* labiate; the *tube* dilated upwards and compressed. *Stam.* 2. *Filaments* with 2 divaricating branches, 1 only bearing a perfect, single cell of an *anther*. —Named from *salvo* to *save*, or *heal*, in allusion to its balmy or healing qualities.

1. *S. *praténsis* L. (*Meadow C.*, or *S.*); root-leaves oblong ovate-cordate at the base irregularly crenate stalked, those of the stem few sessile, uppermost lanceolate acuminate, bracteas cordate-ovate acuminate shorter than the calyx, corolla thrice as long as the calyx glandular and viscid at the summit *E. B.* t. 153.

Dry meadows and about hedges, England, rare: near Cobham in Kent. ♃. 6, 7.— *Stem* varying from 6 inches to 2 feet high.

2. S. *Verbenáca* L. (*wild English C.*, or *S.*); leaves broadly ovate or oblong crenate, lower ones long-stalked, upper ones broader sessile semiamplexicaul, bracteas cordate-ovate acuminate about as long as the calyx, tube of the corolla much narrower and scarcely longer than the calyx. *E. B.* t. 154.

Dry pastures and banks, especially in a chalky or gravelly soil; not uncommon in England, but in Scotland only found about Edinburgh. ♃. 5—8.— *Stems* one to two feet high. Lower *leaves* petiolate, ovate, scarcely cordate at the base; upper ones sessile and acute, less lobed, but more serrate; all wrinkled with veins. *Bracteas* 2 under each whorl of flowers, cordate, acute, entire, ciliated. *Cal.* hairy, segments mucronate. *Cor.* small in proportion to the calyx, purple. *Upper lip* concave compressed.

3. S. *clandestína* L. (*small-flowered S.*); leaves ovate-oblong incise-toothed or pinnatifid, lower ones stalked, upper oblong acute sessile scarcely cordate or amplexicaul, bracteas cordate-ovate acuminate slightly shorter than the calyx, tube of the corolla longer than the calyx. S. obtusata *Link.* S. præcox *Savi.*

Dry gravelly banks, rare. Lizard Point, Cornwall. Jersey. ♃. 7.— This is a very variable plant, but usually with deeply toothed or pinnatifid leaves, and appears to be the southern form or representative of *S. Verbenaca*, to which also several other supposed species may be conveniently referred.

B. *Stamens* 4. (Gen. 3—20.)

Tribe I. MENTHOIDEÆ. *Tube of the cor. scarcely longer than the cal., its limb* 4—5*-cleft, nearly regular. Stam. diverging upwards.* (Gen. 3.)

3. MÉNTHA *Linn.* Mint.

Cal. equal, 5-toothed; its *mouth* naked or rarely villous. *Cor.* nearly regular, 4-cleft; its *tube* very short. *Stam.* diverging, exserted or included. *Anther-cells* parallel.—Name: *μινθα* or *μινθη*, an ancient Greek term.

* *Throat of the cal. naked. Inflorescence terminating the stems. Upper or all the whorls approximated into spikes or in terminal heads.*

† *Leaves sessile or the lower ones only stalked.*

1. M. *sylvéstris* L. (*Horse M.*); leaves subsessile ovate elliptical or lanceolate sometimes subcordate at the base serrate, downy hoary beneath, spikes almost cylindrical scarcely interrupted, bracteas subulate, calyx very hairy, its teeth acuminated.—*α.* leaves lanceolate. *E. B.* t. 686.—*β.* leaves elliptical. M. rotundifolia *Sole.*

Moist waste ground: not uncommon in England. Sidlaw Hills, Forfarshire. Ireland. ♃. 8, 9.—Partial bracteas sometimes much longer than the *flowers* and far more conspicuous than in the figure in *E. B.* There is a variety with somewhat wrinkled and crisped leaves, which passes into our *β.*: it however can scarcely be *M. crispa E. B. S.* t. 2785, which seems, from the figure, more allied to *M. aquatica.*

2. M. *rotundifólia* L. (*round-leaved M.*); leaves sessile elliptical obtuse sharply serrate wrinkled downy shaggy beneath, spikes interrupted, bracteas lanceolate, calyx somewhat hairy, its teeth short and acute. *E. B.* t. 446.

Moist places, in waste ground; not unfrequent in many parts of England. Anglesea. Near Auchindenny, Scotland; but scarcely wild. Near Cove, Ireland. ♃. 8, 9.

3. M. **víridis* L. (*Spear M.*); leaves lanceolate acute glabrous serrate sessile, spikes cylindrical interrupted, bracteas subulate, calyx-teeth linear-setaceous. *E. B.* t. 2424.—*β. crispa* Benth. (*δ Sm.*)

Marshy places, in many parts of England, according to *Smith.* Cairnhill, near Edinburgh.—*β.* Glen Farg, Perths., along with *M. viridis α.* and *M. piperita.* ♃. 8.—Mr. Bentham remarks that the *bracteas* and the *calyx* are either glabrous or hairy: the *pedicels* seem to be always glabrous. Cultivated for culinary purposes, being aromatic and pungent.

†† *Leaves stalked.*

4. M. *piperíta* Sm. (*Pepper M.*); leaves ovate-lanceolate or oblong strongly serrate acute slightly hairy stalked, upper ones smaller, spikes lax short obtuse interrupted below, bracteas lanceolate, calyx tubular with lanceolate subulate teeth quite glabrous at the base. *E. B.* t. 687.—*β. sylvestris* (Sole), leaves ovate-rounded and almost cordate at the base, spikes elongated.

Watery places, in many parts of England, but often escaped from gardens. Alford, Aberdeenshire; North Queensferry. ♃. 8, 9.—Much cultivated for the sake of its essential oil, which resides in minute glands conspicuous on the *leaves* and especially on the *cal.* Mr. W. Wilson finds a *var.* near Warrington, in which these glands are not visible even with a microscope: "its odour is sweet and mild, without the pungency of the common sort cultivated in gardens."

5. M. *aquática* L. (*Water capitate M.*); leaves ovate serrate stalked rounded or slightly cordate at the base, uppermost ones bracteiform and shorter than the flowers, flowers dense in terminal obtuse heads or spikes and sometimes also in remote axillary whorls, calyx tubular, its teeth triangular-subulate.—*α.* leaves pubescent, calyx and pedicels hairy. M. hirsuta *L.*: *E. B.* t. 447.—*β.* leaves incise-toothed and crisped. M. crispa *E. B. S.* t. 2785?—*γ.* leaves, calyx, and pedicels quite glabrous. M. citrata *Ehrh.* M. odorata *Sole*: *E. B.* t. 1025.[1]

Banks of rivers and marshes, frequent.—*β.*? Northumberland, and near Audley-End, Essex.—*γ.* Cheshire, and near Bedford in N. Wales. ♃. 8, 9.—Of the *var. γ.* we have only seen garden specimens: it is quite glabrous and has the smell of the *Bergamot-orange* or the herbage of *Monarda didyma*, whence it is called the *Bergamot-mint.* We refer *M. crispa* E. B. S. here, on the authority of Mr. Bentham; but the flowers are not sufficiently capitate, although the spike be shorter than in *M. piperita*; Mr. Babington refers it to *M. sylvestris*: as, however, all the crisped-leaved forms of *Mint* are monstrosities, the species from which they are derived can scarcely be determined by the usual characters.

** *Throat of the cal. naked. Inflorescence indeterminate, flowers in axillary distant whorls, none among the uppermost leaves (or much shorter than they).*

† *Leaves stalked.*

6. M. *satíva* L. (*Marsh whorled M.*); leaves stalked elliptical ovate or ovate-lanceolate serrate, upper ones similar but smaller all longer than the distant dense whorls, calyx with

[1] Nearly all the species of this genus are hairy with serrate leaves, but are subject to two principal variations, *viz.*:—to be almost entirely glabrous, in which case the ped cels and lower part of the calyx become quite glabrous, and the odour of the species is milder and even pleasant;—and to have the leaves cut and crisped. The latter is more strictly a monstrosity, and is sometimes accompanied with a considerable change in the inflorescence.

lanceolate acuminate teeth. M. arvensis, var. *Benth.* — *α.* whole plant more or less hairy, calyx and pedicels hairy. *E. B.* t. 448. — M. acutifolia *Sm.*: *E. B.* t. 2415. — *β.* whole plant nearly glabrous, pedicels and lower part of the calyx quite glabrous. M. rubra *Sm.*: *E. B.* t. 1413.

Wet places, banks of rivers, and in hedges and thickets. 7, 8. — Mr. Bentham unites this to the next; and the only difference is in the form of the teeth of the *calyx*. The present is never, we believe, found in corn-fields, while genuine specimens of the other are almost confined to them or gardens; but *M. gentilis* L. has the calyx and large upper leaves of *M. arvensis*, while it is almost glabrous like *M. rubra* Sm., and grows in wet places, thus seeming to connect the two.

7. M. *arvénsis* L. (*Corn M.*); leaves stalked ovate or elliptical sometimes cordate at the base serrate, upper ones similar and equally large all longer than the distant whorls, calyx campanulate, its teeth triangular acute about as broad as long. — *α.* hairy, leaves narrowed at the base, calyx clothed all over with spreading hairs. *E. B.* t. 2119. — *β.* hairy, leaves somewhat cordate rugose, calyx clothed all over with spreading hairs. M. agrestis *Sole*: *E. B.* t. 2120. — *γ.* ? more glabrous, upper part of the calyx clothed with erect hairs, lower part and pedicels glabrous. M. gentilis *E. B.* t. 2118.

α. Corn-fields, common. — *β.* corn-fields and neglected gardens; Somersetshire; plentiful in Sussex. — *γ.* watery places, rare. Holt in Norfolk; Somersetshire; river-side above Warrington. N. Wales. ♃. 8, 9. — The smell of the common variety has been compared to that of decayed cheese.

†† *Leaves nearly sessile.*

8. M. **praténsis* Sole (*narrow-leaved M.*); leaves nearly sessile ovate-lanceolate acute serrate, upper ones similar all longer than the distant subglobose whorls, calyx campanulate, lower part and pedicels glabrous, teeth triangular acute hairy. M. gentilis *Sole*: *E. B.* t. 449. M. gracilis *Sm.*

Watery places in moist meadows (*Sm*). ♃. 8, 9. — *Stem* and *leaves* usually glabrous. *Leaves* paler beneath and the *calyx* glandular. With this we are not acquainted. Sole doubts if it be indigenous. Mr. Bentham remarks that it is intermediate between *M. viridis* and *M. sativa* var. *β.*, having the inflorescence of the present section and the nearly sessile leaves of *M. viridis*.

*** *Throat of the calyx closed with hairs. Flowers in axillary distant whorls, none among the uppermost leaves.*

9. M. *Pulégium* L. (*Penny-royal*); flowers whorled, leaves ovate downy obtuse subcrenate, stem prostrate, flower-stalks slightly and calyx very pubescent, teeth of the latter fringed. *E. B.* t. 1026.

Wet commons and margins of brooks; England and S. of Ireland. Rare in Scotland and scarcely indigenous. 4. 8, 9. — The smallest of the genus, readily known by its prostrate *stems*, and small, frequently recurved *leaves*, both of which are thickly covered with short hairs, and especially by the hairy throat of the *calyx*. Smell powerful. Much used medicinally.

Tribe II. SATUREINEÆ. *Corolla two-lipped, the tube about as long as the calyx; lips nearly equal in length, upper one nearly plane. Stam. diverging, nearly equal, protruded.* (Gen. 4, 5.)

4. THÝMUS *Linn.* Thyme.

Flowers whorled or capitate. *Cal.* with 10—13 ribs, tubular, 2-lipped; upper *lip* 3-toothed, lower one bifid; the throat hairy. *Cor.* with the upper lip erect, nearly plane; lower patent and trifid. *Stamens* diverging. *Anther-cells* at first nearly parallel, afterwards diverging; *connectivum* subtriangular. — Name: θυμος, *strength*; from its balsamic odour strengthening the animal spirits.

1. T. *Serpyllum* L. (*wild T.*); flowers whorled and capitate, stems branched decumbent, leaves plane oblong or ovate obtuse entire petiolate more or less ciliated at the base, floral leaves similar, teeth of the upper lip of the calyx ovate-lanceolate of the lower subulate ciliated, upper lip of the corolla notched more or less ovate. *E. B.* t. 1514.—*α*. stems prostrate creeping, flowering shoots ascending, upper lip of the cor. oblong. — *β*. stems and flowering shoots diffuse ascending, upper lip of the cor. semicircular. T. Chamædrys *Fries*.

Hills and dry pastures, abundant. 4. 6—8. — Variable in size, and in the hairiness and scent of its foliage, which is sometimes all over hoary, and smells like lemon. *Flowers* purple. Mr. Bentham, the best authority for what is a species among the Labiatæ, unites *T. Chamædrys* of Fries to *T. Serpyllum*, characterising it as a variety by the larger and less rigid leaves. Mr. Babington separates it on account of its having a different habit:—the above characters of our varieties are intended to indicate the chief specific differences upon which he rests; he adds that in *T. Serpyllum* the achenes are "globose, mealy, with a basal scar," and in *T. Chamædrys*, "roundish, a little compressed, with a basal apiculus, reddish."

[The other Linnæan species of *Thymus* are referred to *Calamintha*.]

5. ORÍGANUM *Linn.* Marjoram.

Spikes (or *heads*) of *flowers* somewhat 4-sided, resembling a *catkin*, imbricated with *bracteas*. *Cal.* equally 5-toothed (or 2-lipped). *Cor.* with the upper *lip* erect, nearly plane; lower one patent, trifid. *Stamens* diverging, *connectivum* subtriangular. — Name: ορος, a *hill*, and γανος, *joy*; from the dry hilly places of which the species are the ornament.

1. O. *vulgáre* L. (*common M.*); heads of flowers roundish panicled crowded, bracteas ovate longer than the calyx, calyx equally 5-toothed, hairy in the throat, leaves stalked broadly ovate obtuse entire or toothed. *E. B.* t. 1143.

Dry hilly and bushy places, not unfrequent. ♃. 7—9. — *Stems* 1 foot high. *Flowers* purple; *bracteas* tinged with the same colour. Fragrant and aromatic.

[*Origanum Onites* L., or *Pot Marjoram*, is mentioned in Ray's Synopsis, p. 236, as having been found by Mr. Dale "on the left hand of the road from Braintree to Raine (Essex), beyond the bridge;" but it cannot be indigenous there, being entirely a Mediterranean plant: the calyx is cleft in front; its upper lip is large and orbicular, lower nearly wanting.]

Tribe III. AJUGOIDEÆ. *Corolla irregular; upper lip abbreviated or apparently wanting. Stamens much exserted, didynamous, parallel, ascending; the two lower ones the longest.* (Gen. 6, 7.)

6. TEÚCRIUM *Linn.* Germander.

Cal. tubular, 5-toothed, nearly equal or 2-lipped. *Cor.* with the upper *lip* bipartite; lower one patent, 3-fid. *Stam.* much exserted. *Cells* of the *anthers* confluent, spreading. — Named from *Teucer*, Prince of Troy, who is said to have first employed this plant medicinally.

1. T. *Scorodónia* L. (*Wood G.*); leaves oblong-ovate cordate at the base petiolate downy crenate green on both sides, floral ones small about the length of the pedicels, flowers in lateral and terminal one-sided racemes, calyx sub-bilabiate, upper lip ovate entire lower 4-toothed, tube of the corolla exserted, stem erect. *E. B.* t. 1543.

Woods and dry stony places, frequent. ♃. 7, 8. — *Stems* 1—2 ft. high. *Leaves* very much wrinkled. *Flowers* yellowish-white. *Stam.* purplish-red. The plant is extremely bitter, and has been sometimes substituted for hops.

2. T. *Scórdium* L. (*Water G.*); herbaceous perennial procumbent at the base villous rarely glabrous, leaves oblong or ovate-oblong toothed sessile green on both sides, floral ones similar, whorls axillary 2—6-flowered, calyx declinate campanulate gibbous at the base on the under side, the teeth short nearly equal. — *α.* leaves narrow or rounded at the base. T. palustre *Lam.* — *β.* leaves shorter cordate-amplexicaul at the base. *E. B.* t. 828. T. scordioides *Schreb.*

Low wet meadows, rare. Near the bridge of Portumna, county Tipperary, Ireland. Oxfordshire and Cambridgeshire. ♃. 7, 8. — The *var. α.* is the plant of Linnæus; but Mr. D. Moore (in the

Phyt. ii. p. 129.) has proved the two supposed species to be the results of situation.

3. T. **Bótrys* L. (*cut-leaved annual G.*); annual erect villous, leaves pinnatifid, segments oblong quite entire or incise divaricate green on both sides, floral leaves similar, whorls axillary 6-flowered, calyx gibbous at the base on the under side inflated tubular, the teeth lanceolate equal.

Rare. In a stony and steep valley, facing the south, near the end of Boxhill farthest from Burford Bridge. ☉. 8.

4. T. **Chamæ'drys* L. (*Wall G.*); leaves ovate inciso-serrate wedge-shaped and entire at the base green on both sides, floral leaves smaller nearly entire, whorls of 2—6 flowers, upper ones racemose, calyx declinate campanulate, the teeth lanceolate-acuminate nearly equal, flowers axillary, stem ascending. *E. B.* t. 680.

Borders of fields and mostly ruined walls; Winchelsea Castle, Sussex; Gateshead, Durham; Stapleton, Radnorshire; city walls of Norwich; plentiful. Near Forfar and Kelly-Angus; Methven wood, Perthshire. Near Cork. ♃. 7.—*Flowers* reddish-purple, large, handsome, mostly in the terminal axils.

[*Teucrium regium* Schreb., supposed by Mr. Bentham to be a var. of *T. flavum*, a plant peculiar to the region of the Mediterranean, is said to have been found on a declivity of the Bloreng near Abergavenny; but it cannot be indigenous.]

7. A'JUGA *Linn.* Bugle.

Cal. ovate, nearly equal, 5-cleft. *Cor.* with the *tube* exserted: upper *lip* short, erect, entire or emarginate; lower one larger, patent, trifid. *Stam.* 4, ascending, protruded above the upper lip; cells of the *anthers* diverging or divaricate, at length confluent.—Name said by Pliny to be corrupted from *Abiga* (*abigo* partum, to prevent) of the Latins, a medicinal plant allied to this; but the Greek αζυξ (accus. αζυγα) implied the same property, and is the more obvious derivation.

1. A. *réptans* L. (*common B.*); glabrous or downy, stem solitary with creeping scions, leaves ovate or obovate sinuate or quite entire. *E. B.* t. 489.

Moist pastures and woods, abundant. ♃. 5, 6.—*Leaves* broadly ovate, more or less crenate, lower ones and those on the runners tapering into a footstalk. *Flowering-stem* erect, with sessile *leaves*. *Flowers* blue (sometimes white or flesh-coloured), in *whorls* of 6—20 from the axils of the upper leaves or *bracteas*, which are often purplish.

2. A. *pyramidális* L. (*pyramidal B.*); hairy or glabrous, upper or all the whorls spicate, scions none, radical leaves oblong-ovate large more or less crenate, floral leaves broadly ovate quite entire or obscurely sinuate longer than the flowers

and crowded into a pyramidal and tetragonal form, upper ones usually coloured. *E. B.* t. 1270.

Highland pastures, rare. Ben Nevis; plentiful at the Burn of Killigower and on the Ord of Caithness; Tor Aichaltie, near Brahan Castle, Ross-shire; Appin; Strath Erric, Inverness-shire; Isle of Lewis. 2. 5, 6.— *Stem* 4—6 inches high. *Leaves* gradually becoming smaller from the base upwards.

3. A. *alpina* L. (*alpine B.*); stem erect hairy without scions, cauline leaves oblong elliptical or ovate narrowed at the base, lower ones rather longer stalked, floral leaves ovate or cuneate coarsely toothed membranaceous green on both sides thinly hairy, upper ones scarcely as long as the flowers, upper whorls of flowers spicate, lower ones distant. *E. B.* t. 477.

Mountains; rare. Wales. County of Durham (*Sm.*, denied by *Mr. Winch*); Castleton, Derbyshire. Cave-hill, Belfast. 2. 7.— We have seen no British specimens of this plant, and the Scotch ones, so called, have proved to be only *A. reptans.* The plant above described is the Swiss one (*A. Genevensis* L.): it is not improbable, as Fries says, that the true *A. alpina* L. has scions, although not preserved with the specimen, and if so it may be only an alpine form of *A. reptans.*

4. A. *Chamæpitys* Sm. (*Ground-Pine*, or *yellow B.*); hairy, stems much branched spreading, leaves tripartite their segments linear entire, floral leaves similar longer than the axillary solitary flowers. *E. B.* t. 77. Teucrium *L.*

Sandy or gravelly fields. Not unfrequent in Kent and Surrey; Triplow Heath, Cambridgeshire; Purfleet, Essex. ☉. 4—10.— Very different in habit from the preceding species. *Flowers* yellow, spotted with red, and nestled among the narrow segments of the *leaves*, of which the lowermost are much broader. *Stem* reddish-purple, glutinous.

Tribe IV. Nepeteæ. *Cor.* 2-*lipped. Stamens ascending or converging, shorter than the upper lip.* (Gen. 8—21.)

* *Cal. equal or oblique*, 5—10-*toothed, not* 2-*lipped.* (Gen. 8—16.)

† *Stamens ascending, longer than the tube of the corolla.* (Gen. 8—15.)

8. Ballóta *Linn.* Horehound.

Cal. salver-shaped, equal, with 10 ribs and 5 broad mucronated teeth, naked within. *Cor.* with the *tube* included: upper *lip* erect, concave; lower one trifid, middle lobe the largest, emarginate. The two anterior *stamens* the longest. *Cells* of the *anthers* diverging, opening longitudinally. *Achenes* rounded at the end.—Named βαλλωτη, from βαλλω, to *reject;* on account of its disagreeable smell.

1. B. *nígra* L. (*black H.*); leaves ovate crenate-serrate, bracteas linear-subulate, teeth of the calyx shortly acuminate patent longer than the tube of the corolla. — *α.* cal.-tube shorter and stouter, the teeth broadly ovate short suddenly acuminate mucronate carinato-reflexed. *E. B.* t. 46. B. fœtida *Lam.* B. borealis *Schweigg.* — *β.* cal.-tube narrow and elongated gracefully dilated upwards, the teeth ovate gradually acuminate aristate erect-patent. B. ruderalis *Fries.*

Waste places near towns and villages, less frequent in the north. — *β.* Bomere, Shropshire. ♃. 6—10. — *Stems* 2—3 ft. high. *Flowers* in *whorls*, purple, rarely white. Whole plant fetid. Fries, Leighton, and some others, pronounce the above varieties to be quite distinct species; but Mr. Bentham does not consider them sufficiently marked to be noticed even as varieties.

9. Leonúrus *Linn.* Motherwort.

Cal. with 5 or 10 ribs, equal, with 5 subulate teeth, the throat naked. *Cor.* with the upper *lip* nearly flat, very hairy above, entire; lower one patent, trifid. The two anterior *stamens* the longest. *Anthers* sprinkled with shining dots; *cells* parallel, opening longitudinally. *Achenes* truncate. — Named from λεων, a *lion*, and ουρα a *tail*; from a fancied resemblance in the plant to a lion's tail.

1. L. * *Cardíaca* L. (*M.*); leaves petiolate, lower ones palmately 5-cleft incise-toothed, upper cuneate-lanceolate 3-lobed, uppermost entire, tube of the corolla with an oblique ring. *E. B.* t. 286.

Hedges and waste places, in several parts of England. About Edinb. South of Ireland. ♃. 7—9. — *Stem* 3 ft. high, branched. *Flowers* in crowded *whorls*, white with a reddish tinge; upper lip of *cor.* shaggy. *Cal.* with pungent spreading teeth, the two lower rather the longest.

10. Galeópsis *Linn.* Hemp-nettle.

Cal. campanulate, equal, 5-toothed, teeth mucronate. *Cor.* with the tube exserted, the throat inflated: upper *lip* arched; lower one with 3 unequal lobes, having two teeth on its upper side. The two anterior *stamens* the longest. *Anther*-cells opposite, bursting transversely, two-valved. *Achenes* rounded at the end. — Name: γαλεη, a *weasel*, and οψις, *aspect* or *appearance*; from a resemblance in the lips of the flower to the snout of that animal.

1. G. *Lúdanum* L. (*red H.*); stem softly pubescent with deflexed hairs or glabrous, not swollen below the joints, leaves lanceolate subserrate downy on both sides, calyx having some-

times a few glands, upper lip of the corolla slightly notched. *E. B.* t. 884.

Gravelly or chalky fields, or on limestone rubbish. Rare in Scotland; near Dunfermline. ☉. 7—10. — *Stem* 10—12 inches high, with opposite branches. *Leaves* rather small, petiolate, hairy. *Flowers* purplish rose-coloured. Hairs on the calyx in the common form appressed, with a few glands: when the hairs are spreading without glands, the plant becomes the *G. canescens* Sch., which has been observed at Southampton.

2. G. *ochroleúca* Lam. (*downy H.*); stem softly pubescent with deflexed hairs not swollen below the joints, leaves ovate-lanceolate serrate, soft and downy on both sides, calyx glandular hairy, upper lip of the corolla deeply notched. G. villosa *Huds.*: *E. B.* t. 2353.

Sandy corn-fields, rare. Yorkshire; Lancashire; Nottinghamshire; Berechurch, Essex. Bangor, Wales. ☉. 7, 8. — *Flowers* large, pale yellow. The name given by Lamarck has unquestionably the priority by twelve years of that by Hudson.

3. G. *Tetráhit* L. (*common H.*); stem hispid swollen below the joints, leaves oblong-ovate acuminate hispid serrate, calyx-teeth twice as long as the tube, corolla with the tube as long as the calyx, upper lip erect ovate. *E. B.* t. 207.

Corn-fields and cultivated grounds, frequent. ☉. 7—9. — *Stem* 1—2 ft. high. *Flowers* purplish, often white.

4. G. *versícolor* Curt. (*large-flowered H.*); stem hispid swollen below the joints, leaves oblong ovate acuminate hispid serrate, calyx-teeth shorter than the tube, corolla with the tube much longer than the calyx, upper lip horizontal inflated. *E. B.* t. 667.

Corn-fields, Norfolk; common about Warrington. Near Llanrwst, N. Wales. Abundant in Scotland, especially in the Highlands. Ireland. ☉. 7, 8. — Often 2—3 feet high, with large rank foliage. *Flowers* showy, yellow, with a broad purple spot on the lower lip. Mr. Bentham unites it to the last.

11. Galeóbdolon *Huds.* Weasel-snout.

Cal. campanulate, 5-ribbed, nearly equal, 5-toothed. Upper *lip* of the *cor.* incurved, arched, entire; lower one smaller, in 3 nearly equal lobes. The two anterior *stamens* the longest: *anther*-cells diverging, opening longitudinally. *Achenes* acutely triquetrous, flatly truncate at the end. — Named from γαλεη, a *weasel*, and βδολος, a *fetid scent*, — formerly considered synonymous with *Galeopsis*, from which genus it is now removed. (Mr. Bentham unites it to *Lamium*.)

1. G. *lúteum* Huds. (*yellow W.*, or *Archangel*); lateral lobes of the lower lip of the corolla oblong acute. *E. B.* t. 787.

Woods and shady places, in England, the south of Scotland, and Ireland. ♃. 4—6. — One foot or more high. *Leaves* ovate-acuminate, petiolate, deeply serrate. *Flowers* whorled, yellow; lower *lip* orange and spotted.

12. LÁMIUM *Linn.* Dead-nettle.

Cal. campanulate, 10-ribbed, 5-toothed, nearly equal. *Cor.* with the throat inflated: upper *lip* entire, arched; lower one patent, 2-lobed, with one or two teeth on each side at the base. The two anterior *stamens* the longest. *Anther*-cells diverging, opening longitudinally. *Achenes* acutely triquetrous, flatly truncated at the end — Named from λαιμος, the *throat;* on account of the shape of the flower.

1. L. *álbum* L. (*white D.*); leaves cordate-acuminate deeply serrate staiked, calycine teeth long subulate always spreading, tube of the corolla curved upwards within having a hairy ring, the throat dilated, upper lip oblong, lateral lobes of the lower one with 1—3 long subulate teeth. L. vulgatum *Benth.* — α. flowers white, leaves spotless. L. album *E. B.* t. 768. — β. flowers white, leaves with white blotches. — γ. flowers purple, leaves spotless. L. lævigatum *L.* L. rugosum *Ait.* L. maculatum *Sm.: E. B.* t. 2550. — δ. flowers purple, leaves smaller with white blotches. L. maculatum *L.*

Borders of fields and waste places, abundant. — β. Below Partick near Glasgow. — γ. Naturalized near Bristol, London, and in Fifeshire. — δ. Fifeshire; Musselburgh; Hamilton. ♃. 5—9. — We have followed Mr. Bentham in uniting *L. lævigatum* and *maculatum* of Linn., and *L. rugosum* of Aiton, with *L. album:* we do not find the characters taken from the calyx, and ring of hairs within the corolla pointed out by some, to be constant.

2. L. *purpúreum* L. (*red D.*); leaves cordate crenate all stalked, upper ones crowded, teeth of the calyx as long as the tube always spreading, tube of the corolla straight within having a hairy ring, the throat much dilated, lateral lobes of the lower lip with two short teeth. *E. B.* t. 769.

Borders of fields and in hedges, plentiful. ☉. 4—10. — *Leaves,* especially the upper ones, with a silky hairiness, and a purplish tinge on the floral ones.

3. L. *incísum* Willd. (*cut-leaved D.*); leaves broadly cordate or deltoid-cuneate deeply incise-crenate all stalked, the uppermost crowded, teeth of the calyx subulate about as long as the tube always spreading, tube of the corolla straight naked within, lateral lobes of the lower lip with a short tooth. *E. B.* t. 1933.

Cultivated and waste ground, growing very large in the Hebrides. ☉. 4—6. — Very difficult to be distinguished by characters either

from the last or the next species, and perhaps the three might be judiciously combined.

4. L. *intermédium* Fries (*intermediate D.*); leaves obtuse incise-crenate, lower ones stalked reniform cordate, floral ones sessile rather crowded, teeth of the calyx subulate longer than the tube always spreading, tube of the corolla straight naked within, lateral lobes of the lower lip with a short tooth. *E. B. S.* t. 2941.

Newport, Isle of Wight; Shropshire. Not uncommon in Scotland. Sligo, Ireland. ☉. 6—9. — Calyx spreading, as in the two last, different, even in the herbarium, from that of the next species. Probably it is a mere variety of *L. incisum.*

5. L. *amplexicaúle* L. (*Henbit N.*); leaves orbicular wrinkled incise-crenate, the floral ones sessile becoming distant by the lengthening of the stem, teeth of the calyx lanceolate-subulate about as long as the tube, connivent after flowering, tube of the corolla straight naked within, tooth of the lateral lobes of the lower lip obsolete. *E. B.* t. 770.

Waste places, sandy fields and gardens. ☉. 4—8. — *Corolla* of a fine deep rose-colour, with a very slender tube, often small and abortive although the *achenes* ripen.

13. Betónica *Linn.* Betony.

Cal. ovate, 10-ribbed; teeth 5, equal, awned. *Cor.* with the *tube* exserted, cylindrical: upper *lip* ascending; lower one patent trifid, its middle lobe entire, or nearly so. The two anterior *stamens* the longest. *Anther*-cells somewhat parallel, opening longitudinally. *Achenes* rounded at the end. — Name altered from *Bentonic*, in Celtic; *ben*, meaning *head*, and *ton*, *good*, or *tonic*. Its properties are cephalic.

1. B. *officinális* L. (*Wood B.*); hairy, spike interrupted short, leaves cordate oblong crenate, corolla twice as long as the calyx, stem naked, middle lobe of the lower lip somewhat notched. *E. B.* t. 1142.

Woods and thickets; frequent in England, not common in Scotland. ♃. 6—8. *Stem* 1—2 feet high, hairy, with few *leaves*, the lowermost on long *footstalks*, upper and floral ones sessile, uppermost linear quite entire and as long as the *calyx*. *Spikes* oblong-ovate. *Calyx* nearly glabrous. *Bracteas* ovate, mucronate.

14. Stáchys *Linn.* Woundwort.

Cal. subcampanulate, 10-ribbed; teeth 5, nearly equal, acuminate. *Cor.* with the *tube* as long as the calyx: upper *lip* mostly arched, entire; lower one 3-lobed, with the two lateral lobes reflexed. The two anterior *stamens* the longest. *Anther*-cells diverging, opening longitudinally. *Achenes* rounded at

the end. — This genus scarcely differs from *Betonica* but in the shorter tube of its corolla. — Name: σταχυς, a *spike*; from the nature of the inflorescence.

1. S. *sylvática* L. (*Hedge W.*); whorls of 6—8 flowers distant, bracteas minute, cal.-teeth very acute, leaves cordate-ovate acute serrate long-stalked, upper floral ones linear entire. *E. B.* t. 416.

Woods and shady places. ♃. 7, 8. — *Stem* 2—3 feet high, hairy, filled with pith. *Leaves* truly cordate and tapering from below the middle to a point, in which respect it differs from the following. *Petioles* as long as the leaves themselves. *Flowers* purple.

2. S. *palústris* L. (*Marsh W.*); whorls of 6—10 flowers, bracteas minute, cal.-teeth very acute, leaves linear-lanceolate or ovate-lanceolate rounded or cordate at the base sessile or stalked. — *α.* lower leaves shortly stalked, upper sessile and semi-amplexicaul. *E. B.* t. 1675. — *β. ambigua*, leaves distinctly stalked, stalks not above half the length of the leaf. S. ambigua *Sm.*: *E. B.* t. 2089.

River-banks and watery or moist places, frequent. — *β.* not uncommon in Scotland, especially in the West Highlands; also in various places in England and Ireland. ♃. 7, 8. — *Plant* extensively creeping. *Stem* hollow. Perhaps there are two plants known under the name of *S. ambigua*: the one with narrow leaves, on stalks not a fourth of their length, is certainly a mere variety of *S. palustris*; the other, having broader leaves, and longer stalks, may be a hybrid between it and *S. sylvatica*.

3. S. *Germánica* L. (*downy W.*); whorls many-flowered, leaves oblong-ovate or ovate-lanceolate with a cordate base crenate or serrate densely silky stalked, upper ones lanceolate acute sessile, calyx silky, teeth acute subspinose, corolla externally woolly, bracteas as long as the calyx, stem erect woolly. *E. B.* t. 829.

Fields and hedges in England, on a limestone soil, and chiefly in Oxfordshire and Bedfordshire. Ducklington, Berks. ♃, or ♂ (*Bentham*). 7. — Remarkable for its dense covering of silky hairs or wool. Mr. Bentham remarks that he cannot satisfactorily distinguish this from the garden *S. lanata* on the one hand, nor from *S. alpina* on the other.

4. S. *arvénsis* L. (*Corn W.*); annual, whorls of 4—6 flowers, stem decumbent or ascending, leaves cordate-ovate obtuse crenate slightly hairy stalked, floral ones ovate-oblong sessile acute, teeth of the calyx lanceolate aristate, corolla scarcely longer than the calyx. *E. B.* t. 1154.

Dry corn-fields, frequent. ☉. 4—11. — Distinguished by its diminutive size, weak *stems*, small and obtuse generally stalked *leaves*, and its pale purplish *corollas*, which scarcely exceed the calyx in length.

5. S. **ánnua* L. (*pale annual W.*); annual erect downy, whorls of 4—6 flowers spicate, leaves oblong-lanceolate rather acute crenate-serrate 3-nerved the lower ones stalked, floral ones lanceolate acute, cal. hairy its teeth lanceolate subulate, tube of the corolla longer than the calyx. *E. B.* t. 2669.

Fields between Gadshill and Rochester. ☉. 8, 9.— *Achenes* roundish, glossy, minutely rough.

15. Népeta *Linn.* Cat-mint. Ground-Ivy.

Cal. tubular, many-(15-) ribbed, its mouth usually a little oblique, 5-toothed. *Cor.* with the *tube* exserted: upper *lip* straight, emarginate or bifid; lower 3-fid. The two anterior stamens the shortest. *Anthers* before bursting approaching in pairs; cells diverging.—Named, some say, from *Nepi* a *town in Italy;* others from *Nepa*, a *scorpion*, for whose bite this plant was considered a cure.

1. N. *Catária* L. (*Cat-mint*); stems erect, flowers in spiked subpeduncled dense many-flowered whorls, leaves stalked cordate incise-serrate whitish pubescent beneath. *E. B.* t. 137.

Hedges and waste places, especially in a chalky or gravelly soil in England. Rare in Scotland; hedges near Craig-Nethan Castle, Glasgow, and between Culross and Kincardine. At Rathfarnham; and by the Shannon, opposite Limerick; Ireland. ♃. 7—9.— *Stems* 2—3 feet high, downy, as well as the *leaves*, and whitish. *Floral leaves* bract-like. *Flowers* white, tinged and spotted with rose colour. Upper lip of the *corolla* emarginate, lower with the lateral lobes reflexed, the middle lobes broad, concave, crenated. *Anthers* reddish. *Achenes* smooth and glabrous.

2. N. *Glechóma* Benth. (*Ground-Ivy*); procumbent, leaves reniform crenate, whorls axillary stalked unilateral 3—4-flowered, teeth of the calyx ovate mucronate. Glechoma hederacea *L.*: *E. B.* t. 853.

Hedges and waste places, frequent. ♃. 3—5.— Extensively creeping. *Leaves* stalked, downy; floral ones similar to the others. *Flowers* large, blue, or very rarely pure white. Upper lip of the *cor.* bifid; middle lobe of the lower one emarginate, plane, lateral lobes spreading.

†† *Stamens ascending, included within the tube of the corolla.* (Gen. 16.)

16. Marrúbium *Linn.* White Horehound.

Cal. with 10 ribs and 5 or 10 spreading teeth, the throat hairy. *Cor.* with the *tube* exserted; upper *lip* erect; lower one 3-lobed, middle lobe the largest, emarginate. The two anterior *stamens* the longest. *Achenes* flatly truncated at the

end. — Name of doubtful origin; some say from a town so called in Italy.

1. *M. *vulgáre* L. (*common white H.*); everywhere hoary with a white thick pubescence or woolliness, stem erect, leaves roundish-ovate toothed or crenate wrinkled, calyx with 10 setaceous hooked teeth, upper lip of the corolla oblong bifid. *E. B.* t. 410.

Waste places and way-sides, but scarcely wild. Frequent in England; less common in Scotland, where it is found near Edinburgh; also in Ireland. 4. 8, 9. — *Stem* 1—1½ ft. high, bushy. *Flowers* small, almost white, in crowded whorls. Smell aromatic; flavour bitter. This plant has been much in use for coughs and asthmas.

** *Calyx* 2-*lipped. The two anterior stamens the longest.* (Gen. 17—20.)

† *Stamens distant, but converging under the upper lip of the corolla.* (Gen. 17.)

17. CALAMINTHA *Mœnch.* Calaminth. Basil-Thyme. Wild-Basil.

Cal. 13-nerved, tubular: upper *lip* 3-, lower 2-fid, throat mostly hairy. *Tube* of the *cor.* straight: upper *lip* straight nearly plane; lower one spreading trifid. Anther-*cells* at length diverging. *Connectivum* subtriangular. — Name: καλος, *good*, and μινθα, *mint*; a plant whose scent drove away serpents.

* *Cal. gibbous at the base below. Middle lobe of the lower lip of cor. nearly entire. Whorls of about 6 simple* 1-*flowered pedicels, with almost no bracteas.* Acinos.

1. C. *Acinos* Clairv. (*common B.*); stem ascending branched, leaves oblong on short stalks acute serrate more or less ciliated at the base. Thymus *L.*: *E. B.* t. 411. Acinos vulgaris *Pers.*

Cultivated fields, especially in a gravelly, sandy, chalky soil. Rare in Scotland; North Queensferry, &c. ☉. 7. — *Stem* 6—8 inches long. *Leaves* sometimes almost entire. *Flowers* bluish-purple. Lower *lip* of the *corolla* with the middle segment emarginate. Smell fragrant, aromatic.

** *Cal. nearly equal at the base. Middle lobe of the lower lip of cor. emarginate. Whorls of two lax peduncled cymes. Bracteas minute.* Calamintha.

2. C. *Nepeta* Link and Hoffm. (*lesser C.*); stem herbaceous with procumbent ascending or erect branches, leaves shortly stalked ovate serrate pale beneath, cymes stalked dichotomous many-flowered, calyx subcampanulate obscurely 2-lipped, teeth shortly ciliated all nearly of the same shape, the upper ones

slightly shorter, hairs in the mouth prominent. Melissa *L.* Thymus *Sm.: E. B.* t. 1414.

Dry banks and way-sides, on a chalky soil, in England, not common. ♃. 7, 8.—"Rather smaller in all its parts than the next, especially the leaves, which are strongly serrate. Odour strong, resembling *Mentha Pulegium.* The prominent white hairs on the mouth of the cal. distinguish this species from the next." *Sm.*

3. C. *officinális* Mœnch (*common C.*); stem herbaceous with loose ascending branches, leaves stalked broadly ovate obtuse crenate-serrate green on both sides, cymes stalked few-flowered shortly dichotomous or umbellate, calyx distinctly 2-lipped, teeth with long ciliæ, those of the upper lip triangular straight or ascending, of the lower subulate and longer, hairs in the mouth not prominent, lobes of the lower lip of the corolla distant, middle one the longest. Thymus Calamintha *Scop.: E. B.* t. 1676. Melissa Cal. *L.*

Way-sides and borders of fields, chiefly in gravelly soils in England, not very common. South of Ireland. ♃. 7—9. — *Root* sometimes throwing out scions above-ground, and not creeping below. Plant aromatic and employed to make herb-tea. Mr. Bentham remarks that neither by habit nor characters can this be at all times distinguished from *C. Nepeta* or *sylvatica;* and Mr. H. Watson is equally at a loss: we experience the same difficulty.

4. C. *sylvática* Bromf. (*Wood C.*); stem herbaceous with ascending branches, leaves stalked broadly ovate sharply serrate green on both sides, cymes stalked many-flowered dichotomous, calyx distinctly 2-lipped, teeth with long cilia, those of the upper lip spreading or recurved, of the lower subulate and longer, hairs in the mouth not prominent, lobes of the lower lip of the corolla contiguous, all nearly equally long. *E. B. S.* t. 2897.

Among copse-wood in the Isle of Wight. Kent. ♃. 8—10. — *Root* slightly creeping below ground. *Leaves* large. *Cymes* on longer stalks than in the last species. It must be confessed that the principal distinction between this and the last lies in the upper lip of the calyx and corolla, and that it is almost impossible to detect these characters in dried specimens.

**** Cal. nearly equal at the base. Middle lobe of lower lip of cor. notched. Whorls sessile, dense, many-flowered, with numerous linear bracteas, forming a sort of involucre.* Clinopodium.

5. C. *Clinopódium* Benth. (*common W.*); leaves ovate obscurely serrate, whorls hairy, bracteas setaceous, pedicels branched. Clinopodium vulgare *L.: E. B.* t. 1401.

Hills and dry bushy places, not uncommon. ♃. 7—9. — *Stem* 1—1½ feet high, with soft hairs. *Flowers* in crowded *whorls*, large, purple. Smell aromatic.

[*Melissa officinalis* L., or Balm, has been found naturalized about

Bridgewater, also in North Devon, and some other places in the south of England and Ireland.]

†† *Stamens ascending, parallel.* (Gen. 18—20.)

18. Melíttis *Linn.* Bastard-Balm.

Cal. with branching veins, campanulate, ample: upper *lip* 2—3-toothed; lower 2-lobed, lobes broadly ovate. *Cor.* with the *tube* much exserted: upper *lip* nearly flat (or slghtly concave), entire; lower one 3-lobed, spreading, lobes rounded, nearly equal. *Anthers* approaching in pairs and forming a cross: *cells* distinct, diverging, opening longitudinally.—Name: the same as μελισσα, a *bee;* from μελι, *honey;* because yielding honey to bees.

1. M. *Melissophýllum* L. (*Bastard-Balm*). *E. B.* t. 577. M. grandiflora *Sm.: E. B.* t. 636 (*excl. syn. of Curtis*).

Woods, coppices, and hedges in the south (Hampshire), and particularly the south-west, of England. ♃. *5, 6.* — A most beautiful plant, a foot to a foot and a half high, with ample oblong-ovate or somewhat cordate serrate *leaves*, and large conspicuous often highly coloured *flowers:* the lower lip of the corolla is sometimes purple with a white margin, sometimes spotted with purple, but it varies considerably. The plant, when growing, is said to have a disagreeable smell, but when dried it is fragrant, like the *Anthoxanthum odoratum*, and the scent is retained for many years in the herbarium. *M. grandiflora* Sm. (the true *M. Melissophyllum* L.) is neither sufficiently marked nor permanent to constitute a distinct variety.

19. Prunélla *Linn.* Self-heal.

Cal. ovate: upper *lip* plane, more or less distinctly 3-toothed; lower one bifid. *Cor.* with the upper *lip* nearly entire, arched: lower one 3-lobed. *Filaments* with two teeth at the extremity, one bearing the 2-celled *anther*. *Style* bifid.—Named from the German, *braüne*, the *quinsy*, whence comes *Brunella* of Ray, softened into *Prunella*.

1. P. *vulgáris* L. (*common S.*); leaves stalked oblong-ovate, upper lip of the calyx truncate, its teeth usually obsolete, the teeth of the lower lip ovate-lanceolate mucronate, corolla scarcely twice the length of the calyx. *E. B.* t. 961.

Moist and barren pastures, frequent. ♃. *7, 8.* — *Leaves* in British specimens entire or toothed, in foreign ones sometimes incise or pinnatifid. *Flowers* very densely whorled, so as to form an imbricated oblong *spike*, with a pair of *leaves* at its base, and a pair of broad *bracteas* beneath each *whorl*. *Cor.* violet-blue, its lower *lip* finely toothed at the margin.

20. Scutellária *Linn.* Skull-cap.

Cal. broadly ovate, having a conspicuous concave tooth or scale on the upper side; its 2 nearly equal entire *lips* closed after flowering. *Cor.* with the *tube* much exserted: upper *lip* straight, arched; lower one trifid. *Filaments* simple: *anthers* of the two lower stamens 1-celled, of the two upper 2-celled. *Style* bifid, upper lobe very short. — Named from *scutella*, a *little dish* or *cup*, which the calyx with its appendage or ear somewhat resembles.

1. S. *galericulàta* L. (*common S.*); stem branched divaricated, leaves crenate oblong or ovate-lanceolate rounded or cordate at the base, flowers axillary solitary opposite secund, calyx downy without glands. *E. B.* t. 523.

Banks of rivers and lakes, especially in stony places. ♃. 7, 8. — *Stem* 8 or 10 inches to 1 foot high. *Flowers* rather large, blue, usually downy.

2. S. *mínor* L. (*lesser S.*); glabrous, leaves shortly stalked obtuse mostly quite entire, lowest ones broadly ovate, intermediate ones ovate lanceolate cordate and somewhat hastate at the base, upper and floral ones lanceolate rounded at the base, flowers (small) solitary axillary opposite unilateral, corolla nearly glabrous with the throat dilated, calyx downy without glands. *E. B.* t. 524.

Moist heathy places and by the sides of lakes, chiefly in the western and middle counties of England, very rare on the east coast. Wales. West coast of Scotland, rare; bog between Luss and Helensburgh, Dumbartonshire. ♃. 7—10. — *Stem* 4—6 inches high. Lower *leaves* sometimes with one or two teeth at the base, and hence subhastate; upper ones much narrower and quite entire. *Flowers* pale-reddish, almost white. Lower *lip* spotted.

Ord. LXIV. VERBENACEÆ *Juss.*

Calyx tubular or campanulate, persistent. *Corolla* monopetalous; *tube* elongated; *limb* irregular 4—5-lobed. *Stamens* 4 didynamous or 2; *anthers* 2-celled. *Ovary* 2—4-celled, 2—4-seeded. *Style* 1, terminal. *Stigma* bifid or entire. *Capsule* separating at length into 2—4 *achenes*, or indehiscent, or a *berry* with 1—4 *nucules*. *Albumen* 0. *Radicle* inferior. — Trees *or* shrubs *or* herbaceous plants. Leaves *generally opposite*. — The *Teak* of the East Indies, of which the timber is extensively employed there for ship-building, belongs to this Natural Family.

1. Verbéna *Linn.* Vervain.

Cal. tubular, with 5 teeth, one of them generally shorter than the rest. *Cor.* tubular, with the *limb* rather unequal, 5-cleft. *Stamens* included (very rarely only 2). *Ovary* 4-celled; *cells* 1-seeded. *Capsule* dividing into 4, 1-seeded *achenes*. — Name: *ferfaen* in Celtic; derived from *fer*, to *drive away*, and *faen*, a *stone*, from having been supposed to cure the complaint so called. *Théis.*

1. V. *officinális* L. (*common V.*); stamens 4, stem 4-angled erect somewhat hispid, leaves rough especially beneath shining above lanceolate incise-serrate or trifid with the segments cut, spikes filiform somewhat panicled, flowers rather remote, bracteas ovate acuminate about half the length of the calyx. *E. B.* t. 767.

Road-sides and waste ground, frequent in England. Rare in Ireland. Inverkeithing, Scotland. ♃. 7—9.

Ord. LXV. LENTIBULARIACEÆ *Rich.*

Calyx divided. *Corolla* irregular, 2-lipped, with a spur. *Stamens* 2, from the base of the corolla. *Anthers* 1-celled. *Ovary* 1-celled. *Style* usually wanting or very short (rarely filiform). *Stigma* of 2 plates, upper one smaller, sometimes obsolete. *Capsule* with a large central *placenta*, bearing many *seeds*, which are very minute, without *albumen*.—*Small*, herbaceous, *marsh* plants *with* leaves *all radical and undivided; or aquatic* plants *with compound root-like* leaves *bearing bladders.*

1. Pinguicula. Cal. 2-lipped, upper lip 3-lobed.
2. Utricularia. Calyx bipartite, upper segment entire.

1. Pinguícula *Linn.* Butterwort.

Cal. 2-lipped, upper lip of 3, lower of 1, bifid segment. *Cor.* ringent. *Stigma* sessile. *Capsule* with 2 lateral valves. — Named from *pinguis*, *fat*; the leaves being thick and greasy to the touch.

1. P. *vulgáris* L. (*common B.*); spur subulate-cylindrical nearly straight shorter than the veinless limb of the corolla whose segments are very unequal oblong-obovate rounded even diverging from each other and all entire, capsule ovate acute. *E. B.* t. 70.

Bogs, moist banks and heaths, most abundant in the North. ♃. 5—7. — *Foliage* radical, covered with minute raised crystalline points, fleshy, the margins involute. *Scapes* single-flowered, and the *calyx*

somewhat downy. *Flowers* purple, very handsome, drooping; palate covered with white compactly jointed hairs. *Anthers* vertical, placed just beneath the large horizontal plate or lobe of the *stigma*. *Caps.* ovate, 1-celled, bursting half-way into 2 valves.—The leaves are said to coagulate milk, whence the English name.

2. P. *grandiflóra* Willd. (*large-flowered B.*); spur subulate-cylindrical often notched about as long as the veined limb of the corolla whose segments are very unequal broadly obovate wavy contiguous or overlapping at the edges, the middle one of the lower lip notched, capsule ovate obtuse. *E. B.* t. 2184.

Western part of the county of Cork, in marshy ground; and at Kenmare. ♃. 5, 6.—This beautiful plant, apparently as rare upon the Continent as in Britain, may be easily cultivated for a succession of years; like *P. vulgaris*, its old leaves die away in winter, and buds or hybernacula are formed, which expand into perfect individuals in the spring. It must be confessed, indeed, that the above characters are obtained solely from cultivated specimens, and that we have seen dried wild ones which we were uncertain whether to refer here or to the preceding species.

3. P. *alpína* L. (*alpine B.*); spur conical shorter than the unequal limb of the corolla and curved towards the lower retuse lip, scape glabrous, capsule acute. *E. B. S.* t 2747.

Bogs in Scotland, very rare. Isle of Skye. Bogs of Aughterflow and Shannon, on the Rose Haugh property, Ross-shire. ♃. 6.—*Leaves* and *flowers* about the size of *P. Lusitanica*; but the texture of the foliage most resembles that of *P. vulgaris*. *Corolla* yellowish; within on the under side is a tuft of deep-yellow crystalline hairs. *Spur* remarkably short and conical, curved upwards.

4. P. *Lusitánica* L. (*pale B.*); spur cylindrical obtuse decurved shorter than the almost equal limb of the corolla, leaves veiny and as well as the scape hairy, capsule globose. *E. B.* t. 145.

Marshy places and wet moors, chiefly confined to the west side of the kingdom: never, we believe, found on the east side, and rarely in the interior. Plentiful in the Hebrides and Ireland, but most abundant in the extreme north of Scotland, near Cape Wrath. ♃. 6—10.

2. Utriculária *Linn.* Bladderwort.[1]

Cal. bipartite, upper lobe entire, lower often notched or 2-

[1] The British species of this genus are all aquatics: and their roots, stems, and even leaves, are furnished with numerous, membranaceous reticulated *vesicles*, which, according to Hayne, are filled with water, till it is necessary the plant should rise to the surface and expand its blossoms above that fluid. The vesicles are then found to contain only air, by aid of which the plant floats: this air again in autumn gives place to water, and the plant descends to ripen its seeds at the bottom. Mr. Wilson observes, with reference to the bladders of *U. vulgaris*, that "they have *an orifice closed by an elastic valve, opening inwards*, and of much thinner texture than the bladder, to which it is attached, where the crest is placed. Aquatic insects often enter these bladders, and are, of course, confined there."

toothed. *Cor.* personate. *Style* 0 (or filiform and persistent). *Stigma* 2-lipped. — Named from *utriculus*, a *little bladder*.

1. U. *vulgáris* L. (*greater B.*); spur conical straight obtuse about half the length of the corolla, the upper lip of which is as long as the projecting palate, sides of the lower lip recurved, leaves pinnate-multifid remotely spinulose, vesicles attached to the leaves. *E. B.* t. 253.

Ditches and deep pools, not unfrequent. 4. 6, 7. — *Roots* much branched. *Shoots* or *runners* floating horizontally in the water, clothed with capillary multifid *leaves*, bristly at the margin and bearing little crested bladders. *Scape* erect, 4—6 inches high, with 6—8 bright yellow *flowers* in a raceme. Lower *lip* convex, much larger and broader than the upper one, and having a projecting palate closing the mouth. *Spur* short, deflexed. *Filaments* curved, thick, resembling those of *Pinguicula*. *Anthers* slightly cohering. *Stigma* large, ciliated.

2. U. *intermédia* Hayne (*intermediate B.*), spur conical acute pressed against the lower lip somewhat shorter than the corolla, the upper lip of which is entire twice as long as the palate, lower entire nearly flat, leaves tripartite their segments linear dichotomous ciliated, vesicles on leafless branches. *E. B.* t. 2489.

Ditches and deep pools, much less frequent than the preceding. Scotland Heath, Corfe Castle, Dorset. In Rescobie Lake, Forfar; also near Elgin. About Dublin and Bantry in Ireland. 4. 6, 7. — This has probably been passed by as the *U. vulgaris*; but its *flowers* are fewer (only 2 or 3 on each scape), smaller, of a pale-yellow, and have a longer upper *lip*. The *stems* are more leafy, and the bladders arise from branched stalks, not from the leaves. It propagates itself by buds or gemmæ which proceed from the ends of the shoots, and seldom flowers. At the season of flowering, however, *Mr. Borrer* finds the vesicles all immersed in the mud, and the leafy shoots floating under water.

3. U. *minor* L. (*lesser B.*); spur obtuse keeled deflexed much shorter than the corolla, the upper lip of which is notched and as long as the palate, lower lip obovate nearly flat, leaves subtripartite, the segments linear dichotomous glabrous, vesicles attached chiefly to the leaves. *E. B.* t. 254.

Ditches and pools, rare; not unfrequent in many parts of Scotland, extending its range even to Skye. 4. 6—9. — Smaller than the last. *Vesicles* mixed with the leaves, which latter are glabrous at the margin. *Flowers* very pale yellow, and small. *Spur* scarcely any. Lower *lip* almost plane; palate scarcely closing the mouth, not projecting beyond the lip. *Stigma* glabrous.

Ord. LXVI. PRIMULACEÆ *Vent.*

Calyx 4—7-cleft (half superior in *Samolus*). *Corolla* regular, 4—7-lobed, inferior (wanting in *Glaux*). *Stamens* as many as and alternate with the sepals, opposite to the lobes of the corolla. *Ovary* 1-celled, with the *ovules* upon a large free central *placenta*. *Style* 1. *Stigma* capitate. *Fruit* a *capsule*. *Seeds* usually peltate. *Embryo* usually transverse (parallel to the *hilum*); very rarely (in *Hottonia*) erect, with the *radicle* close to the *hilum*. *Albumen* fleshy.— Herbaceous plants, *chiefly of the colder and temperate regions.*

* *Ovary superior.*

† *Calyx divided almost to the base.*

8. Centunculus. Cal. 4-partite. Cor. with a subglobose tube. Stam. glabrous. Caps. opening transversely.
7. Anagallis. Cal. 5-partite. Cor. rotate or widely funnel-shaped. Stamens hairy. Caps. opening transversely.
1. Hottonia. Cal. 5-partite. Cor. salver-shaped. Caps. with valves connected at the summit.
6. Lysimachia. Cal. 5-partite. Cor. rotate. Stam. glabrous or glandular. Caps. opening at the summit with 5—10 teeth or valves.
5. Trientalis. Cal. about 7-partite. Cor. rotate. Stam. glabrous. Caps. opening to the base with revolute fugacious valves.

†† *Cal. tubular or campanulate.*

2. Primula. Cal. tubular or campanulate, herbaceous. Cor. salver-shaped; limb spreading.
3. Cyclamen. Cal. campanulate, herbaceous. Limb of cor. closely reflexed.
4. Glaux. Cal. campanulate, coloured. Cor. wanting.

** *Ovary half-inferior.*

9. Samolus. Cor. salver-shaped.

A. *Capsule superior, opening by valves which remain connected at the apex. Seeds with the hilum at the base, and an erect embryo.* Hottonieæ. (Gen. 1.)

1. Hottónia *Linn.* Water-Violet.

Cal. 5-partite. *Cor.* salver-shaped, with a short *tube*, and flat *limb*. *Stamens* 5, glabrous, inserted into the tube, included. *Stigma* globose. *Caps.* globose, crowned with the persistent style, at length splitting at the sides with 5 valves which remain connected at the base and summit. *Seeds* very numerous. — Named after *Pierre Hotton*, a professor at Leyden during the latter half of the 17th century.

1. H. *palústris* L. (*common W.*, or *Featherfoil*); flowers whorled on a long solitary cylindrical stalk, corolla longer than the calyx, leaves pectinated. *E. B.* t. 364.

Ditches and pools in England, but not found in Scotland. Downpatrick, Ireland. 4. 5, 6. — *Root* creeping. *Leaves* all submerged. *Flowers* large, handsome, pale purple, rising above the water.

B. *Capsule superior, opening at the apex by valves or teeth. Seeds peltate; embryo transverse.* PRIMULEÆ. (Gen. 2—6.)

2. PRÍMULA *Linn.* Primrose. Oxlip. Cowslip.

Cal. tubular or campanulate, 5-toothed. *Cor.* salver-shaped, its *tube* cylindrical, its mouth open. *Caps.* opening with 10 teeth. — Named from *primus, first*, on account of the early appearance of the flowers in the most common species, — in France *Primevère.*

1. P. *vulgáris* Huds. (*common P.*); leaves obovate-oblong crenate-toothed wrinkled, scape umbellate usually sessile sometimes on a common stalk, flowers erect, calyx tubular somewhat inflated teeth linear-lanceolate attenuated very acute, limb of the corolla flat, tube with a circle of scale-like folds at the slightly contracted mouth. — *α.* umbel sessile among the leaves. *E. B.* t. 4. P. acaulis *All.* P. grandiflora *Lam.* P. veris γ. acaulis *L.* — *β.* umbel stalked.

Woods, hedge-banks, and pastures, abundant. 4. 4, 5. — If the *flower-stalks* of the *var. α.* or common form, are traced to their very base, they will be found to spring from one common point, and to constitute a sessile *umbel.* The *var. β.* is the *Polyanthus* of our gardens, and often supposed to be *P. elatior.*

2. P. *elátior* Jacq. (*Jacquin's O.*); leaves ovate toothed wrinkled contracted below the middle, scape umbellate outer flowers drooping, calyx tubular usually close to the tube of the corolla, teeth lanceolate acute, limb of the corolla slightly concave, tube open at the mouth without scales or folds. *E. B.* t. 513. P. veris *β.* elatior *L.*

Woods and meadows in the eastern counties of England, particularly about Bardfield in Essex. Hitcham, Suffolk. 4. 4, 5. — We are not satisfied that this species is really distinct from the numerous hybrids between *P. vulgaris* and *P. veris.*

3. P. *véris* L. (*common C.*, or *Paigle*); leaves ovate crenate toothed wrinkled contracted below the middle, scape umbellate, flowers drooping, calyx tubular campanulate, teeth short ovate, limb of the corolla concave, tube with a circle of scale-like folds at the slightly contracted mouth. *E. B.* t. 5.

Meadows and pastures, frequent in a clayey soil in England. Rare in Scotland; near Edinburgh, and in Fifeshire. 4. 4, 5. — On the

Continent the present species and *P. vulgaris* never grow intermingled, and constantly retain the characters assigned to them : in England, however, (and in Scotland wherever *P. veris* is found) they are found together, and a complete series of intermediate forms, constituting the common Oxlip, may be observed, which must either be accounted fertile hybrids, or proofs of the two extremes being only different races of the same species. If this latter view be adopted, the *P. elatior* may rank as a third and connecting race. Speaking of the two extremes, Mr. H. C. Watson says, "the two may be pretty accurately distinguished, each having a variety '*elatior*.' Independently of other characters, all the *Cowslips* and *Cowslip-Oxlips* have the scape and calyx *tomentose* ; whilst *Primroses* and *Primrose-Oxlips* have long soft hairs, and should be called villose or shaggy."

4. P. *farinósa* L. (*Bird's-eye P.*) ; leaves obovate-lanceolate mealy crenulate, calyx oblong-ovate, limb of the corolla plane its mouth obscurely glandular, the segments obcordate distant attenuate at the base nearly as long as the tube. *E. B.* t. 6.

Mountainous pastures in the north of England, especially Yorkshire, not unfrequent. Very rare in Scotland ; South of West Linton, near Edinburgh. ♃. 6, 7. — One of the most elegant of plants, scarcely yielding in beauty to the next species. The powdery substance on the leaves, scape, and calyx, has a musky smell. *Flowers* pale lilac-purple, with a yellow eye.

5. P. *Scótica* Hook. (*Scottish P.*) ; leaves obovate-lanceolate mealy denticulate, calyx ventricose, limb of the corolla flat, its mouth glandular, the segments broadly obcordate approximate half the length of the tube. *E. B. S.* t. 2608.

North coast of Caithness. Frequent also on the north coast of Sutherland, and in the Orkney Islands, growing upon the sandy shores. ♃. 7. — To us this appears a distinct species, but M. Duby is of a contrary opinion. It is not half the size of the preceding, but has a stouter habit. *Flowers* deep bluish-purple, with a yellow eye. In *P. farinosa*, the *germen* is broadly obovate and the *stigma* capitate ; here the *germen* is globose, and the *stigma* has 5 points.

3. Cyclamen *Linn.* Sow-bread.

Cal. campanulate, half 5-cleft. *Cor.* rotate ; the mouth prominent, the segments reflexed. *Stamens* 5, included. *Caps.* globose, 1-celled, opening with 5 teeth. — Named from κυκλος, a *circle*, probably from the circles formed by the spiral peduncles ; in French, *Pain de Pourceau*, and in English *Sow-bread*, because the large tuberous roots are eagerly sought by swine, notwithstanding their highly acrid nature.

1. C. **hederæfólium* Willd. (*Sow-bread*) ; leaves heart-shaped angular finely toothed their ribs and footstalks roughish, tube of the corolla globose, mouth 5-angled "with lunulate 10-toothed sides." C. Europæum *E. B.* t. 548.

On a bank at Bramfield, Suffolk; near Sandhurst (in profusion), and Gouldhurst, Kent; Pembroke; Notts (plentiful). ♃. 9.— *Leaves* springing from the top of the large tuberous *root*. *Cor.* white or flesh-coloured. *Scapes* spirally twisted after flowering, so as to bury the *seed-vessels* in the earth. Probably some of the above stations may belong to *C. Europæum*, as suggested by Mr. H. Watson; our own specimens indeed are too few and imperfect to permit us to ascertain correctly the species. But the whole genus is a Southern and Eastern one, not even occurring in the Flora of Paris; and none of the species can have any claims to be admitted as indigenous, if indeed any can properly be said to be naturalized in this country.

4. Glaúx *Linn.* Sea-Milkwort.

Cal. campanulate, coloured, of 1 piece, 5-lobed. *Cor.* none. *Stam.* 5, glabrous. *Caps.* superior, globose, 5-valved, with about 5 *seeds*.— Name: γλαυξ, a plant so called from its colour being γλαυκος or *sea-green*.

1. G. *marítima* L. (*Sea M.* or *black Saltwort*). *E. B.* t. 13.

Sea-shore and muddy salt-marshes, abundant. ♃. 6, 7.— *Stems* 2—4 or 5 inches long, stout, branched, often procumbent. *Leaves* opposite, ovate, glabrous, fleshy, entire, sessile, small. *Flowers* sessile, solitary, axillary, rose-coloured, with 5 obtuse, spreading lobes.

5. Trientális *Rupp.* Chickweed Winter-green.

Cal. about 7- (5—9-) partite. *Cor.* rotate: *tube* very short; *limb* of as many deep flat divisions as the calyx. *Stam.* as many as the sepals, beardless. *Caps.* opening to the base with 5—9 recurved fugacious valves. *Seeds* with a reticulated tunic.— Name supposed to be the same as *trientalis*, the *third* part of a foot, or 4 inches, such being the usual height of the plant.

1. T. *Europæ'a* L. (*European Chickweed W.*); leaves oblong-obovate obtuse. *E. B.* t. 15.

Woods in the North of England, rare. Abundant in many parts of the Highlands of Scotland. Not found in Ireland. ♃. 6.— *Root* filiform, creeping. *Stems* 4—6 inches high, with 2 or 3 small distant *leaves*, and 4—7 terminal whorled larger ones, from the centre of which arise 1—4 slender single-flowered *peduncles*. *Cal.-leaflets* almost subulate, varying in number from 6 to 9, as do all the other parts of the flower and the valves of the capsule. The beautiful covering, like the finest white lace, of its *seeds*, has been taken for a pericarp by botanists who had not seen the very fugacious horny *valves* of its *capsule*.

6. Lysimáchia *Linn.* Loose-strife.

Cal. 5-partite. *Cor.* rotate. *Stam.* 5—6, not distinctly hairy, sometimes with alternating sterile filaments. *Caps.* 1-celled, 5—10-valved.— Named in honour of king *Lysimachus*, accord-

ing to some; according to others, from λυσις, a *dissolving*, and μαχη, *battle*. The English name, it will be at once seen, has a similar meaning. Pliny says it tames restiff horses.

1. L. *vulgáris* L. (*great yellow L.*); stem erect, leaves ovate-lanceolate nearly sessile opposite or ter-quaternate, panicles compound terminal and axillary, lobes of the corolla ovate obtuse quite entire, stamens unequal combined for half their length into a glandular tube without sterile ones. *E. B.* t. 761.

Sides of rivers and wet shady places, less frequent in Scotland. ♃. 7, 8.— *Stem* erect, 2—3 ft. high. *Leaves* nearly sessile, glabrous or downy beneath. *Panicle* leafy, usually much branched. *Corollas* large, yellow, handsome.

(*L. ciliáta* L. *E. B. S.* t. 2922, has been naturalized near Serbergham, Cumberland; it is a truly N. American species; its stems are erect, peduncles axillary racemose, leaves ovate-lanceolate, subcordate with ciliated petioles, lobes of the corolla crenate, and there are 10 filaments, all distinct, of which 5 are sterile.)

2. L. *thyrsiflóra* L. (*tufted L.*); erect simple, leaves opposite lanceolate sessile, racemes dense many-flowered stalked axillary, segments of the corolla linear-spathulate quite entire, sterile filaments none. *E. B.* t. 176. Naumbergia *Duby*.

Wet marshes and water-sides, very rare in England; Yorkshire, Hertfordshire, and Anglesea. More frequent in Scotland: near Forfar, and at Duddingston Loch, on the east coast; canal-side near Possil, and near Rossdhu, by Loch Lomond, in the former place most abundant, and growing in the water. ♃. 7.— *Stems* 1—2 ft. high. *Flowers* numerous, small, collected into dense, axillary, peduncled *racemes*. Number of the parts of the flower very variable, oftener 6 than 5. *Cor.* deeply cut into very narrow segments, separated by a minute tooth, yellow, and as well as the *cal.* spotted with orange. *Stamens* slightly united at the very base: *anthers* cordate.

3. L. *némorum* L. (*yellow Pimpernel* or *Wood L.*); leaves ovate acute opposite shortly stalked, stem prostrate, peduncles 1-flowered axillary solitary longer than the leaves, calycine segments linear-subulate, stamens smooth distinct. *E. B.* t. 527.

Woods and shady places, frequent. ♃. 5—8.

4. L. *Nummulária* L. (*creeping L.*, *Money-Wort*, or *Herb-Twopence*); leaves opposite subcordate or ovate obtuse shortly stalked, stem prostrate creeping, peduncles 1-flowered axillary solitary shorter than the leaves, calycine segments ovate acute, filaments glandular connected at the base. *E. B.* t. 528.

Shady places and pastures. Commonly cultivated, but scarcely indigenous, in Scotland. ♃. 6, 7.

C. *Capsule superior, opening transversely.* ANAGALLIDEÆ. (Gen. 7, 8.)

7. ANAGÁLLIS *Linn.* Pimpernel.

Cal. 5-partite. *Cor.* nearly rotate. *Stamens* 5, hairy. *Capsule* bursting all round transversely.— Named from *ανα*, *again*, and *αγαλλω*, to *adorn*, from these plants re-adorning, every spring, the fields and road-sides with their beautiful blossoms: for the same reason a *Hyacinth* was called *αγαλλις*.

1. A. *arvénsis* L. (*scarlet P.* or *Poor Man's Weather-glass*); stems ascending or subprocumbent branched, leaves opposite or ternate ovate sessile dotted beneath, peduncles longer than the leaves, calyx nearly as long as the rotate corolla.— *α.* margin of the corolla crenate piloso-glandulose. *E. B.* t. 529.— *β. cærulea;* margins of the corolla toothed scarcely at all glandulose. A. cærulea *Schreb.*: *E. B.* t. 1823.

Corn-fields, frequent.— *β.* not rare in similar situations, principally in England. ☉ 5—11. — *Flowers* generally bright scarlet, sometimes blue, sometimes flesh-coloured, and Mr. Dillwyn Llewellyn has found, at Penllegare, S. Wales, specimens with the flowers pure white, and a small, well defined, bright purplish-pink eye in the centre of every corolla. The Rev. Professor Henslow has proved, by cultivation from seed, that *A. cærulea* and *A. arvensis* are varieties of the same species: on the other hand, Mr. Borrer is of opinion that our two varieties are distinct species, but that each varies with the same tints of colour.

2. A. *tenélla* L. (*Bog P.*): stem creeping filiform, leaves opposite ovate or roundish stalked, peduncles longer than the leaves, calyx four times shorter than the broadly and widely funnel-shaped corolla. *E. B.* t. 530.

Wet mossy bogs, frequent in England, more rare in Scotland. 4. 7, 8. — A beautiful little plant, as are all of this genus, 2—4 inches long. *Leaves* small. *Flowers* large in proportion to the size of the plant, on rather long footstalks. *Cor.* rose colour. *Filaments* slightly connected at the base.

8. CENTÚNCULUS *Linn.* Chaffweed.

Cal. 4-partite. *Cor.* with a globose inflated *tube; limb* spreading, 4-partite. *Stam.* 4, short, beardless. *Caps.* bursting all round transversely. (*Leaves* alternate. *Flowers* sessile.) — Name, it appears, anciently given to the *Pimpernel*, a genus allied to this; and derived, according to Théis, from *cento*, a *patchwork*, from the way in which it covers the ground.

1. C. *minimus* L. (*small C.* or *Bastard Pimpernel*); leaves ovate mucronate sessile. *E. B.* t. 531.

Moist sandy or gravelly places about London, in Kent, Bedfordshire, Norfolk, Suffolk, Hampshire, the South of Ireland, and Lowlands of Scotland, not frequent, — probably, however, often overlooked on account of its small size. ☉. 6, 7. — Plant 1—2 inches high, more or less branched. *Leaves* alternate, ovate, glabrous. *Flowers* extremely minute, sessile, axillary, solitary. *Cor.* pale rose colour, withering. Perhaps the only species of the genus, *C. lanceolatus* of N. America being scarcely distinct.

D. *Capsule half-superior, opening by valves. Embryo transverse.* Samoleæ. (Gen. 9.)

9. Sámolus *Linn.* Brookweed.

Cal. 5-cleft. *Cor.* salver-shaped, its *tube* short, with 5 scales (imperfect *stamens*) at its mouth, alternating with the lobes. *Capsule* half-inferior, opening with 5 valves.— Name, according to Pliny, an ancient Druidical one for some now unknown marsh-plant, possessed of wonderful sanatory properties; probably the same as *slan-lus*, in Celtic, *the healing herb*, or *all-heal*, imitated in Latin by *Samolus*, as if derived from *sanus*, *whole*.

1. S. *Valerándi* L. (*Brookweed* or *Water Pimpernel*); leaves obtuse, racemes many-flowered, pedicels with a small bractea. *E. B.* t. 703.

Marshy and watery places, especially in a gravelly soil. In Scotland always near the sea and chiefly on the west coast. 2. 6—9. — A plant very generally dispersed throughout the world. *Stem* 8—10 inches high, rounded, glabrous, as are the ovate, subpetiolate, entire, fleshy *leaves*. *Flowers* small, white. *Cal.* small, 5-cleft, persistent; its segments crowning the rounded *capsule*.

Ord. LXVII. PLUMBAGINACEÆ *Juss.*

Calyx tubular. *Corolla* regular, of 5 united or distinct *petals*. *Stam.* hypogynous or inserted upon the corolla. *Ovary* single, 1-celled, with one *ovule* suspended from the apex of a stalk arising from the base of the cell. *Styles* 5, sometimes united to the middle or to the summit. *Stigmas* 5. *Capsule* indehiscent or opening irregularly, 1-seeded. *Embryo* straight in the axis of farinaceous *albumen*.— *Herbaceous* or *somewhat shrubby* plants. Flowers *often capitate or spiked*.

1. Armeria. Styles hairy. Scapes simple: flowers capitate.
2. Statice. Styles glabrous. Scapes panicled.

1. Arméria *Willd.* Thrift. Sea-Pink.

Cal. funnel-shaped, plaited, dry and membranous. *Pet.* united at the base, bearing the stamens. *Styles* distinct, hairy: *stigmas* filiform, glandular. (*Flowers* collected into a bracteate

rounded head with an inverted cylindrical sheath.) — Name: *Flos Armeria* was applied by the botanists of the middle ages to some of the Sweet-william Pinks, and is, according to Clusius, the French word *armoiries* latinized.

1. A. *marítima* Willd. (*common T.* or *S.*, or *Sea-Gilliflower*); leaves linear 1-nerved, awns of the calyx short. Statice Armeria *L.*— *α.* leaves flattish above, calyx-tube uniformly hairy.— *β.* leaves flattish above, calyx-tube hairy on the ribs glabrous between them. Statice Armeria *Sm.: E. B.* t. 226.— *γ.* leaves grooved and dotted above, calyx-tube uniformly hairy. A. pubigera *β. Boiss.*— *δ.* leaves grooved above, calyx-tube hairy on the ribs only. A. duriuscula *Bab.*

Muddy sea-shores, and among rocks by the sea-side, *α.* and *δ.* rare; *γ.* common; *β.* on the east coast of Scotland and upon the tops of our highest mountains. ♃. 4—9. — *Leaves* all radical, numerous. *Heads* of *flowers* rose-coloured or white, intermixed with scales, and having, besides, a brown, membranous, 3-leaved *involucre*, terminating below in a sheathing jagged covering to the upper part of the scape, which is usually downy, but sometimes glabrous.

2. A. *plantagínea* Willd. (*Plantain-leaved T.*); leaves linear-lanceolate 3—5-nerved, awns of the calyx long. *E. B. S.* t. 2928. Statice plantaginea *All.*

Abundant in the sandy district of Quenvais, on the west side of the Island of Jersey. ♃. 6, 7. — This is readily distinguished from the last by the broad leaves, and long setaceous teeth to the calyx. *Flowers* pale purple.

2. Státice. *Linn.* Sea-Lavander.

Cal. funnel-shaped, plaited, dry and membranaceous. *Pet.* united at the base, bearing the stamens. *Styles* distinct, glabrous: *stigmas* filiform, glandular. (*Flowers* in unilateral spikes on a panicled *scape*).— Named from στατιζω, to *stop*; having been employed, from its astringent qualities, to check dysentery.

1. S. *Limónium* L. (*spreading-spiked S.*); leaves elliptic-lanceolate stalked mucronate single-ribbed, scape with a much-branched spreading corymb at the top, branches curved outwards, spikes short densely flowered, calyx-segments acute with intermediate teeth. *E. B.* t. 102.

Frequent on the muddy shores and salt-marshes of England. Rare in Scotland and perhaps found only about Berwick upon Tweed. ♃. 7—9. — *Leaves* 4 inches to a span high, ½ or ¾ as tall as the scape, single-ribbed with lateral oblique veins, mucronate: the mucro is recurved, being "a continuation of the margin of the leaf, and is channelled. *Scape* angular, often furrowed above, with a coarse uneven surface." *Panicle* truly corymbose and level-topped, with

spreading or sometimes recurved densely flowered branches, in which respect this species appears chiefly to differ from the following.

2. S. *Bahusiénsis* Fries (*remote-flowered S.*); leaves oblong-lanceolate stalked mucronate single-ribbed faintly nerved, scape much branched from near the base panicled, branches ascending or incurved, spikes elongated with rather distant flowers, calyx-segments acute with intermediate teeth. S. rariflora *Drej.*: *E. B. S.* t. 2917.

Muddy shores, more widely distributed than the last. Chichester Creek, Sussex; Fareham Creek, &c. near Portsmouth; Devonshire; Kent; Suffolk. Wigton and Kirkudbrightshire, Scotland. Galway, Ireland. 4. 7, 8. — Perhaps too nearly allied to *S. Limonium.*

3. S. *binervósa* G. E. Sm. (*upright-spiked S.*); leaves spathulate narrowed into a winged stalk more or less mucronate somewhat 3-nerved at the base, scape branched from below the middle, panicle elongated, branches distichous, spikes erect, calyx with plane blunt segments without intermediate teeth. *E. B. S.* t. 2663. S. cordata *G. E. Smith, in Cat. of Pl. of Kent*, p. 18. t. 2. f. 2. (*vix Linn.*) S. spathulata *Hook. Brit. Fl.* S. Limonium β. *E. Fl.* v. ii. p. 116.

On rocks and cliffs near the sea. Coast of Kent; in several places; Harwich; rocks, near Holyhead; St. Bees' Head, near Whitehaven; Devon; Somerset. Mull of Galloway, and south of Clanyardfell, Wigtonshire; Scotland. Dublin, Waterford, and N. of Ireland. Jersey and Guernsey. 4. 7, 8. — This has been lately divided into two species by Boissier: 1. *S. Dodartii* Gir., sterile branches none, spikes thick and densely imbricated. 2. *S. occidentalis* Lloyd, some of the lower branches sterile, spikes slender. We find every intermediate form among our British specimens: it is true that Boissier adduces some other characters, but these we cannot perceive in any of them. According to Boissier, who had examined the specimens, the *S. spathulata* of Desfontaines is quite a different species (although the characters sufficiently accord), so that we resume the appellation given by G. E. Smith in place of the more modern one of Girard, adopted by Boissier in De Candolle's Prodromus. The *mucro* of the *leaves* is small, always or usually dorsal just below the extremity.

4. S. *Cáspia* Willd. (*matted Thrift*); leaves spathulate, scapes paniculated almost from the base with numerous slender zigzag distinctly bracteated branches, of which the upper ones only bear flowers, axils of the branches acute-angled, flowers crowded, calyx with ovate cuspidate toothed segments without intermediate teeth. S. reticulata *Sm.* (not *Linn. Sp. Pl.*) *E. B.* t. 328.

Muddy salt-marshes, rare. Norfolk, principally at Cley, and Wisbeach. 4. 7, 8. — Much smaller than either of the two last, with very short *leaves*. *Scapes* several from the same root, remarkable

for their numerous, slender entangled, barren branches, and small crowded *flowers*, in second terminal *spikes*. *S. reticulata* L., a Maltese plant, as far as regards the character in the Species Plantarum and reference to the figures in Boccone and Plukenet is, according to Boissier, the *S. cancellata* Bernh., a species with acute lobes to the calyx; we do not know what is preserved in the Linnean herbarium. The identity of the British plant with *S. Caspia* W. was pointed out in former editions of this Flora.

Ord. LXVIII. PLANTAGINACEÆ *Juss.*

Sometimes monœcious. *Calyx* (of the perfect and staminate flowers) 4-partite. *Corolla* scariose, 4-lobed. *Stamens* 4, or rarely 1, alternate with the segments of the *corolla*. *Filaments* exserted. *Ovary* 1-celled with 1 *ovule*, or 2-celled with 4 or many *ovules*. *Style* and *stigma* simple, the latter rarely divided. *Capsule* opening transversely, 2- or 4-celled, with 2—4 or many *seeds*; or hard and indehiscent, 1-celled, 1-seeded. *Seeds* peltate, inserted on the dissepiments or at the base of the cell, rarely erect. *Embryo* in a fleshy or horny *albumen*.—*Slightly bitter and astringent.* Seeds *mucilaginous*.

1. Plantago. Flowers perfect. Stamens inserted upon the tube of the corolla. Caps. dehiscent, 2—4-seeded.
2. Littorella. Flowers imperfect. Stamens hypogynous. Fruit bony, indehiscent, 1-seeded.

1. Plantágo *Linn.* Plantain.

Flowers perfect. *Cor.* with an ovate *tube*; *limb* 4-partite, reflexed. *Stam.* 4, inserted upon the tube of the corolla. *Caps.* opening transversely, of 2-4 cells, 2-4- or many-seeded.—Named from *planta*, a *plant*, but why applied to any particular one, by the Romans, is unknown. All the species are mucilaginous and astringent.

1. P. *májor* L. (*greater P.*); leaves broadly ovate mostly on longish grooved foot-stalks, scape rounded, spikes long cylindrical, sepals with a prominent dorsal nerve, capsule 2-celled with the dissepiment plane, each cell many-seeded. *E. B.* t. 1558.—*β. microstachya*; scape shorter than the leaves, spike lax with about 3—6 flowers.

Pastures and road-sides frequent. — *β.* Turf-bogs, Cunnamara, Ireland, *4*. 6—8.—*Leaves* all radical, more or less spreading, with 7 nerves (or in *β.* 3 nerves), entire or toothed, glabrous or pubescent. *Petioles* varying in length, sometimes as long as the leaf. *Spike* usually dense. At the base of each flower is a concave *bractea*. *Cal.* of 4 minute *leaflets*. *Caps.* ovate, with 4—8 *seeds* in each cell.

2. P. *média* L. (*hoary P.*); leaves elliptical pubescent sessile or tapering into short and broad foot-stalks, scape rounded, spike cylindrical, sepals not keeled, capsule 2-celled with the dissepiment plane, cells 1-seeded. *E. B.* t. 1559.

Meadows and pastures in chalky districts in England. Not indigenous in Scotland, but occasionally observed where it had been introduced with grass seeds. ♃. 6—10. — *Stamens* long, with dark purple *filaments*. *Spike* shorter than in *P. major*, and more silvery from the shining scariose *corollas*; but a more essential difference exists in the *cells* of the *capsule*, which are only 1-seeded.

3. P. *lanceoláta* L. (*Ribwort P.*); leaves lanceolate tapering at both ends, scape angular, spike ovate or cylindrical, bracteas ovate-acute or cuspidate, sepals nearly glabrous, two of them keeled the other two united, dissepiment of the capsule plane, cells 1-seeded. *E. B.* t. 507.

Meadows and pastures, often too abundant. ♃. 6, 7. — The *leaves* and *scape* yield strong fibres. The *spike* has its bracteas occasionally, by luxuriance, converted into leaves; and sometimes a new scape and spike grow out horizontally from among the bracteas. The spike varies much in form: it is usually short, ovate, or oblong-cylindrical, but in sandy places at a considerable elevation on the mountains, becomes quite globose: on the other hand there is a luxuriant variety (*P. altissima* L.), found at Lamb-islet, Bay of Dublin, with the scape often 2 feet high, and the spike very long, and truly cylindrical. *P. Lagopus* L. a closely allied species, but differing by being annual, and the sepals villous at the apex, has been found at Wandsworth, Surrey, but has been introduced; on the continent it seems confined to the region of the Mediterranean.

4. P. *marítima* L. (*Sea-side P.*); leaves linear grooved fleshy convex below, scape rounded, spike cylindrical, bracteas ovate-acuminate, sepals not winged, tube of the corolla pubescent, capsule 2-celled with the dissepiment plane, cells 1-seeded. *E. B.* t. 175.—β. *major*; leaves almost plane inclining to lanceolate toothed glabrous, scape densely hairy.—γ. *minor*; leaves linear-lanceolate densely hairy as well as the scape.

Grassy pastures by the sea-side; frequent near the margin of fresh-water lakes, and at the *bases* of mountains sloping down to them, as in Glen Dochart, Glen Lochy, and by Loch-Lomond; also on the *summits* of the highest mountains.— β. On the island of Cumbrae, among rocks.—γ. on rocks by the House of Skail, Pomona, Orkney. ♃. 6—9.— Varying much in size and in the breadth and hairiness of its *leaves* and *scapes*: sometimes the *leaves* are almost filiform, often lanceolate; in the curious *var.* γ. found in Orkney, they are clothed with short dense hairs; they are always very succulent, and either entire or toothed.

5. P. *Corónopus* L. (*Buck's-horn P.*); leaves linear pinnatifid or toothed, scape rounded, bracteas ovate-subulate, lateral sepals with a ciliated membranaceous wing at the back, dissepi-

ment of the capsule with 4 angles (thus forming 4 cells), cells 1-seeded. *E. B.* t. 892.

Gravelly sterile soils, inland and upon the coast. ☉. 6, 7.—*Leaves* mostly spreading, very variable in size and pubescence, pinnatifid; segments often toothed or again divided. *Scape* hairy *Spike* mostly cylindrical and slender. In small specimens from Staffa, the spike is ovate, composed of not more than 7 or 8 flowers; whilst the leaves and scapes are quite hispid.

2. Littorélla *Linn.* Shore-weed.

Monœcious.—Barren fl. Cal. of 4 leaves. *Cor.* 4-fid, *tube* cylindrical. *Stam.* 4. hypogynous.—*Fertile fl. Cal.* 0 (unless three bracteas can be so called). *Cor.* urceolate, contracted at the mouth, 3—4-cleft. *Style* very long. *Fruit* hard and somewhat bony, indehiscent, 1-celled, 1-seeded.—Named from *littus*, the *shore;* from its place of growth.

1. L. *lacústris* L. (*Plantain S.*); *E. B.* t. 468.

In watery, sandy, and stony places; particularly abundant on the margins of the Highland lakes, where it forms a green turf. 2. 6. —*Leaves* all radical, linear, fleshy, semicylindrical, about 2 inches long. *Sterile flowers* stalked, solitary, sometimes 2 (*Mr. W. Wilson*), upon a *scape* 2—3 inches long. *Fertile fl.* sessile in the axils of the leaves, surrounding the sterile peduncles. *Germen* oblong, green. *Style* very long, filiform. *Stigma* a mere point.

Sub-Class IV. MONOCHLAMYDEÆ.[1] (Ord. LXIX.—LXXXVII.)

Flowers incomplete. Perianth single; in other words, the Calyx and Corolla forming but one floral covering, or altogether wanting.

Conspectus of the Orders.

A. *Barren flowers neither in catkins nor cones; fruit not surrounded by a hardened or prickly involucre. Style or stigma present.*

* *Ovaries superior, several, distinct, each* 1*-celled.*

[1. Ranunculaceæ. Stamens hypogynous. Leaves without stipules.
27. Rosaceæ. § Sanguisorbideæ. Stamens perigynous. Stipules cohering with the petiole.]

** *Ovary superior, solitary,* 1*-celled.*

† *Ovules* 5 *or more. Fruit capsular, opening by valves.*

[6. Primulaceæ. Perianth campanulate. Style 1.
11. Caryophyllaceæ. § Alsineæ. Sepals distinct or nearly so. Styles several.]

[1] From μονος, *one*, or *single;* and χλαμύς, a *tunic*, or *garment*.

†† *Ovule solitary (or rarely 2). Fruit indehiscent. Leaves with stipules.*

72. Polygonaceæ. Stipules forming a sheath round the stem or branch.

[27. Rosaceæ. § Sanguisorbidæ. Stipules cohering with the petiole.

34. Paronychiaceæ. Stipules free, scariose, permanent. Flowers perfect.]

80. Urticaceæ. Stipules free, membranaceous, usually deciduous. Flowers all or some imperfect.

††† *Ovule solitary. Fruit indehiscent or bursting transversely. Leaves without stipules.*

79. Ceratophyllaceæ. Perianth 0. Involucre 10—12-cleft. Embryo straight. Floating plants.

70. Chenopodiaceæ. Perianth 3—5-cleft and herbaceous, or imbedded in the rachis and fleshy. Stamens nearly hypogynous. Fruit an indehiscent utriculus. Embryo curved. Terrestrial plants.

69. Amaranthaceæ. Perianth 3-partite (nearly scariose), with external bracteas. Stamens hypogynous. Fruit opening transversely near the base. Terrestrial herbaceous plants.

71. Scleranthaceæ. Perianth tubular, persistent, at length dry and hardened. Stam. perigynous. Styles 2. Embryo annular. Herbs.

82. Elæagnaceæ. Perianth of the fruit tubular, persistent, at length succulent. Style 1. Embryo straight. Leaves with shining scales beneath. Shrubs.

73. Thymelaceæ. Perianth tubular, deciduous. Stamens perigynous. Style 1. Embryo straight. Bark tough. Shrubs.

*** *Ovary superior, solitary, with 2 or more cells.*

† *Fruit 4-lobed and separating into 4 achenes, or capsular, never samaroid.*

[52. Monotropaceæ. Flowers perfect. Cal. 5-sepaled. Stam. 10, hypogynous. Style 1, entire. Seeds many in each cell.

30. Lythraceæ. Flowers perfect. Cal. campanulate, toothed. Stam. 6, perigynous. Style 1, entire. Seeds many in each cell.]

78. Callitrichaceæ. Perianth 0. Styles 2. Fruit of 4 indehiscent 1-seeded carpels united at the axis and at length separating.

77. Euphorbiaceæ. Flowers imperfect. Styles 2—3. Fruit capsular.

†† *Fruit indehiscent.*

76. Empetraceæ. Flowers imperfect. Perianth of 2 or more rows of imbricated scales. Stam. about 3. Fruit fleshy. Leaves heath-like.

[54. Oleaceæ. Perianth 4-cleft or none. Stam 2. Style 1. Fruit samaroid. Leaves opposite, without stipules.]

81. Ulmaceæ. Perianth about 5-cleft. Stam. 5 or more. Fruit samaroid. Leaves flat, alternate, with stipules.

[25. Rhamnaceæ. Perianth 4—5-cleft. Stam. 4—5. Fruit fleshy. Leaves flat.]

**** *Ovary inferior, its cells many-seeded.*

[37. Saxifragaceæ. Stam. 8—10. Styles 2. Ovary imperfectly 2-celled.

28. Onagraceæ. Stam. 4. Style 1, filiform: Stigma capitate. Ovary 4-celled.]

75. Aristolochiaceæ. Stam. 6—12. Style short: Stigma rayed. Ovary 3- or 6-celled.

***** *Ovary inferior, its cells* 1-*seeded.*

[29. HALORAGACEÆ. Limb of pistillate perianth minute. Stam. 1—8. Style or styles filiform, villous. Leaves verticillate. Aquatic plants.]

74. SANTALACEÆ. Limb of perianth conspicuous. Stam. 4—5. Style glabrous. Leaves alternate. Root woody.

B. *Barren flowers in catkins; or fruit surrounded by a hardened or prickly involucre. Ovules and seeds within a closed pericarp. Style or Stigma present.*

85. SALICACEÆ. Ovary superior, 1-celled, many-ovuled. Fruit 2-valved. Seeds numerous, comose. Woody plants.

86. CUPULIFERÆ. Ovary inferior, with 2 or more cells. Fruit indehiscent, 1—3-seeded. Trees or shrubs.

84. BETULACEÆ. Ovary superior, 2-celled. Ovules solitary, pendulous. Fruit indehiscent, membranous. Trees or shrubs.

83. MYRICACEÆ. Ovary superior, 1-celled. Ovule 1, erect or ascending. Styles 2. Perianth 0. Fruit indehiscent, drupaceous. Shrubs.

82. ELÆAGNACEÆ. Ovary superior, 1-celled. Ovule 1, ascending. Style 1. Perianth of pistillate flowers tubular, at length succulent. Fruit indehiscent. Shrubs.

[46. COMPOSITÆ (Genus 47.). Fruit indehiscent. Pistillate flowers surrounded by a prickly involucre. Plants herbaceous.]

C. *Barren flowers in catkins. Fruit in cones; or the seed surrounded by a fleshy involucre Ovules and seeds not contained within a closed pericarp. Style and Stigma* 0.

87. CONIFERÆ. Scales of barr. catkins (monadelphous filaments) bearing the anther-cells on the under-side, those of the cones (open ovaries) bearing the ovules on the upper surface.

I. *Flowers usually perfect, i. e. each with stamens and pistil.* (ORD. LXIX.—LXXV.)

* *Ovary superior or nearly so.* (Ord. LXIX.—LXXIII.)

ORD. LXIX. AMARANTHACEÆ *Juss.*

Sometimes monœcious. *Perianth* 3—5-leaved, usually with small bracteas at the base. *Stamens* 3—5, hypogynous, sometimes monadelphous, opposite to the segments of the perianth. *Anthers* often 1-celled. *Ovary* 1, 1—2-celled, with 1 or several *ovules*. *Styles* 1 or 0. *Stigma* simple or compound. *Capsule* membranaceous, 1-celled. *Seeds* attached to a free central *placenta*, often stalked. *Embryo* curved round a farinaceous *albumen*.—Herbs, *rarely* shrubs. Stems *not jointed*. Leaves

without stipules. Closely allied in essential character to, but differing in habit from, the following Order.—Many of the species are used as potherbs.

1. Amaránthus *Linn.* Amaranth.

Flowers polygamous-monœcious, tribracteated.—*Barren fl. Perianth* single, deeply 3—5-partite. *Stam.* 3—5, distinct: *anthers* 2-celled.—*Fertile fl. Perianth* single, deeply 3—5-partite. *Styles* 3 or 2. *Utricle* with 1 vertical *seed*, bursting all round transversely.—Named from *α*, *not*, *μαραινω*, to *fade*, or, flowers which do not fade; they are commonly called "Everlasting Flowers."

1. A. **Blítum* L. (*wild A.*); flowers 3-cleft and triandrous in small axillary clusters the segments very obtuse, leaves long-stalked obovate obtuse attenuate at the base, perianth as long as the bracteas and half the length of the utricle which is 2—3-toothed and wrinkled at the apex, stem erect or ascending angled and furrowed. *E. B.* t. 2212.

Low waste grounds and near dunghills, appearing occasionally about Cambridge, London, and in Huntingdonshire. ☉. 8. — An extremely misunderstood species, of which we have seen no British specimen: several other half-naturalized plants are probably often collected for it.

(*A. retroflexus* L. has been found near Hertford, and Sawbridgeworth, but has no title to a place in the flora of this country: it is scarcely a European plant, but rather an American one.)

Ord. LXX. CHENOPODIACEÆ *Juss.*

Sometimes monœcious or polygamous. *Perianth* free, generally deeply cleft and without bracteas at its base. *Stamens* mostly 5 (in *Salsola* 2 or 1). *Stamens* from the base of the perianth, and opposite to the segments: *anthers* 2-celled. *Ovary* 1, 1-celled, with a single *ovule*. *Style* divided, rarely simple. *Fruit* indehiscent (usually a *utricle*, sometimes a *berry*). *Seed* 1, at the base of the cell. *Embryo* spiral and without *albumen*, or curved round a farinaceous *albumen*.—Herbs, *rarely* shrubs; *without stipules*. Flowers *small*, *inelegant*.—In this Order are many potherbs, some are tonic, and antispasmodic. The seeds of *Chenopodium* are employed in the preparation of Shagreen; *C. Quinoa* is a most extensively used article of food in Peru; *C. ambrosioides* and *C. Botrys* contain an essential oil; *C. anthelminticum* yields *Wormseed oil*, a powerful vermifuge, as its name implies; and *C. olidum* exhales pure *Ammonia*. *Atriplex hortensis* is the *Garden Orache*; *Spinachia*, the Spinach; *Beta*,

the Beet. All yield carbonate of soda and hence *Barilla*. From *Beet-roots* is extracted the very fine sugar now extensively manufactured in France.

* *Stem jointed.* (*Embryo annular.*)

4. SALICORNIA. Stam. 1—2.

** *Stem continuous. Leaves semicylindrical or terete.* (*Embryo spiral.*)

5. SUÆDA. Segments of the perianth remaining unaltered.
6. SALSOLA. Segments of the perianth at length with a dorsal transverse wing.

*** *Stem continuous. Leaves flat.* (*Embryo annular.*)

† *Flowers all similar and mostly perfect.*

1. BETA. Lower half of the ovary and utricle adhering to the perianth.
2. CHENOPODIUM. Ovary and utricle free from the perianth.

†† *Flowers imperfect: all, or some of the pistillate ones, of a different form.*

3. ATRIPLEX.

SUB-ORD. I. CYCLOLOBEÆ. *Embryo annular, curved round the (usually) copious albumen.*

Tribe I. CHENOPODEÆ. *Flowers uniform, mostly perfect. Stem continuous.* (Gen. 1, 2.)

1. BÉTA *Linn.* Beet.

Perianth single, 5-cleft, persistent. *Stam.* 5. *Utricle* reniform, imbedded in the fleshy base of the calyx.—Name from the Celtic *bwyd*, or *biadh*, *food* or *nourishment*, being used for that purpose.

1. B. *vulgáris* L. (*common B.*); stems erect or procumbent at the base angled branched, spikes longish narrow somewhat erect leafy panicled, flowers 1—4 together sessile, when in fruit 2—3 cohering, segments at length keeled and inflexed at the summit. B. maritima *L.*: *E. B.* t. 285.

Sea-shores, especially in a muddy soil. England; and the south, principally, of Scotland. ♂ or ☿. 6—9. — *Root* large, thick, and fleshy. *Stem* tall. *Root-leaves* subovate, succulent, entire, waved, upper cauline ones nearly sessile, oblong. *Spikes* of *flowers* numerous, leafy: *leaves* small, at the base of each flower or pair of flowers, which are greenish. *Styles* usually 2. — Moquin-Tandon has at length satisfied himself that the *Sea-Beet* is the wild form of the *cultivated Beet*; Smith observes that, according to Linnæus, *B. maritima* dif-

fers from *B. vulgaris* in the keel of the calyx being entire. The present is esteemed a wholesome food when boiled. Mr. W. Wilson finds always 3 styles, the germen 3-sided, flowers often 3 together, and that when the seed is ripe the germen becomes purple and granulated.

2. Chenopódium *Linn.* Goose-foot.

Flowers usually all perfect. *Perianth* nearly uniform, usually 5- (sometimes 2—4-) cleft, persistent and unaltered, or at length fleshy, closing upon the *fruit*. *Ovary* and *fruit* free from the perianth. *Seed* lenticular. (*Leaves* flat. *Bracteas* under each flower none.)—Named from χην, χηνος, a goose, and πους, a *foot;* from the shape of the leaves in some species. They are more or less employed as potherbs.

* *Seeds horizontally compressed.* Chenopodium *Moq.*

† *Leaves undivided.*

1. C. *ólidum* Curt. (*stinking G.*); leaves ovate-rhomboid entire mealy, flowers in dense clustered leafless spikes, stem diffuse. *E. B.* t. 1034. C. Vulvaria *L.*

Waste places, and under walls, especially near the sea on the E. side of both England and Scotland. ☉. 8, 9. — *Leaves* small, petiolate, greasy to the touch and covered with a pulverulent substance, which, when bruised, yields a detestable odour, resembling that of putrid fish. *Seeds* very small, shining, slightly rough.

2. C. *polyspérmum* L. (*many-seeded G.*); leaves ovate-elliptical sessile, spikes axillary elongated subcymose.—*α.* stems all prostrate, leaves obtuse, spikes cymose leafless. C. polyspermum *E. B.* t. 1480.—*β.* stem erect, leaves acute, spikes leafy scarcely cymose. C. polyspermum *Curt.* C. acutifolium *E. B.* t. 1481.

α. Cornwall. — *β.* not unfrequent in England, in waste places and among rubbish, and on ballast-hills. ☉. 8, 9. — The spikes of *flowers* are more or less cymose, sometimes leafy and leafless upon the same individual; so that we cannot assent to the opinion that the *C. acutifolium* is distinct from *C. polyspermum*, of which Wallroth, an excellent observer, says, "variat foliis ovatis, obtusis, emarginatis, rubro-marginatis, acutis; cymis aphyllis et foliosis expansis." It is remarkable for its very numerous, dark brown, shining, minutely dotted *seeds* (which are obtuse at the margins), in part only enveloped by the perianth.

†† *Leaves toothed, angled or lobed.*

3. C. *úrbicum* L. (*upright G.*); leaves triangular toothed or nearly entire, spikes long erect approaching the stem sub-simple nearly leafless, flowers scattered on the spikes, edge of the seeds

obtuse.—*α.* leaves with short triangular teeth.—*β.* leaves with large acute teeth. *E. B.* t. 717. C. intermedium *Mert.* et *Koch.*

α. Near Oxford (Sm.)—*β.* Waste places, under walls, and about towns and villages. Scarcely indigenous in Scotland. ☉. 8, 9. — *Stem* erect, angular. *Leaves* large, truncate or subcuneate at the base, of a light or subglaucous green, their margins in *var. β.* deeply and irregularly toothed. *Flowers* in rather small, but remote clusters, on very long straight erect spikes. *Seeds* minutely rough, coated very tightly with the papillose, fragile *utricle*, large in comparison with those of the following species, "almost as big as rape-seed:" *Curtis.*

4. C. *murále* L. (*Nettle-leaved G.*); leaves shining ovate approaching to rhomboid acute sharply toothed entire at the base, spikes divaricately branched cymose leafless, seeds opaque minutely granulated acutely keeled at the edge. *E. B.* t. 1722.

Waste places near towns and villages. Not found in Scotland. ☉. 8. 9. — Branches of the *spikes* spreading. *Flowers* rather distant. Smell unpleasant.

5. C. *hýbridum* L. (*Maple-leaved G.*); leaves subcordate angulate-dentate acuminate, teeth large distant, spikes very much branched subcymose divaricated leafless, seeds opaque dotted, their edge obtuse and not keeled. *E. B.* t. 1919.

Waste places and in cultivated fields, not common; about London, Colchester, Dedham, Ely, and Edinburgh. ☉. 8. — *Stems* slender. *Leaves* large, with very prominent teeth or angles. *Spikes* similar to the last, but the branches are more remote and spreading, and the margin of the seed is different.

6. C. *álbum* L. (*white G.*); leaves ovate inclining to rhomboid sinuate-toothed entire at the base, upper ones oblong perfectly entire, spikes branched somewhat leafy, seeds smooth or very minutely dotted, shining bluntly keeled at the edge.—*α.* leaves mealy, axillary spikes dense. *E. B.* t. 1723.—*β.* leaves green more entire, spikes elongated more branched. *Sm.* C. viride *L.*

Waste places, dunghills, &c., common. ☉. 7—9. — *Leaves* covered with a whitish and mealy substance, varying in their width, and in the erosion, or blunt toothing, of the upper half of their margins. When they are green and nearly entire it is the *C. viride* L.

7. C. *ficifólium* Sm. (*Fig-leaved G.*): leaves long stalked deltoid cuneate at the base toothed and sinuate at the margin thin, lower ones hastate 3-lobed lobes ascending, middle ones elongated, upper ones oblong, uppermost linear quite entire, seeds shining dotted their edge obtuse and not keeled. *E. B.* t. 1724.

Dunghills and waste ground, about London and Yarmouth. ⊙. 8, 9. — Hudson and Moquin-Tandon refer this to the obscure *C. serotinum* L., which, however, Sir James Smith says is a Spanish plant, not yet found in Britain, but Linnæus himself considered the English plant to be the same.

** *Seeds vertically compressed.* Blitum *Moq.*

8. C. *glaúcum* L. (*Oak-leaved G.*); leaves all oblong toothed and sinuated at the margin glaucous and mealy beneath, spikes erect mealy simple leafless, stigmas short, seed minutely reticulate-rugose. *E. B.* t. 1454.

Waste ground, especially on a sandy soil about London; also in Dorsetsh., Isle of White, Sussex, Durham, Northumberland, and Glamorganshire. ⊙. 8. — *Seeds* minute *Perianth* 4—5-partite in some (perhaps only the terminal) *flowers* with the seed horizontal, as in the E. Bot. figure, sometimes 2—3-partite, when the seed appears to us to be always vertical. " *Stam.* 1—3: " *Wils.*

9. C. *rúbrum* L. (*red G.*); leaves triangular somewhat rhomboid toothed and serrate, spikes erect compound leafy, flowers crowded on the spikes, stigmas short, seeds smooth shining.— *α.* leaves usually rhomboid irregularly toothed, edge of the seeds obtuse and slightly keeled, stem erect. *E. B.* t. 1721.—*β. botryodes;* leaves triangular shortly attenuated at the base scarcely toothed, edge of the seeds acutely keeled, stems prostrate. C. botryodes *Sm.: E. B.* t. 2247.

α. Dunghills and under walls; also in salt-marshes. Rare (if indigenous) in Scotland.—*β.* waste ground near the sea; Yarmouth, Lowestoft, South Shoebury. ⊙. 8, 9. — *Stems* frequently reddish. *Leaves* always more or less attenuated at the base, by no means truncate. *Spikes* very compound, thick. The salt (or alkali) contained in the juice of this plant crystallizes upon the surface of the stem. *Perianth* in 2—3 deep segments, with vertical *seeds*, in the lateral flowers; the terminal ones are usually 5-partite, with the seed horizontal; others are 4-partite. The seeds are small, smooth, enveloped in the loose thin *utricle.*

10. C. *Bonus Henrícus* L. (*Mercury G.*, or *good King Henry*); leaves hastate-triangular (mostly) entire, spikes compound terminal and axillary erect leafless, stigmas elongated, fruit longer than the perianth, seed dotted with the edge obtuse. *E. B.* t. 1033.

Waste places and way-sides frequent. ♃. 5, 6, and partially 6—8. — *Stems* 1 ft. high, striate. *Leaves* large, dark green, used, when boiled, instead of *spinach.* *Perianth* quite campanulate, 5-cleft, halfway down. *Seed* always vertical, coated with a true pellicle, besides the capsular integument, on removing which the seed is smooth and shining: *Wils.*

Tribe II. ATRIPLICEÆ. *Flowers imperfect. Stem continuous.* (Gen. 3.)

3. A'TRIPLEX *Linn.* Orache.

Flowers monœcious or diœcious.—*Sterile fl. Perianth* 3—5-partite, without bracteas. *Stam.* 5. *Style* 0.—*Fertile fl.* sometimes of two kinds. 1. *Perianth* 5-partite, without bracteas. *Stam.* usually 0. *Style* bipartite. *Ovary* free from the perianth. *Seed* horizontally compressed. 2. *Perianth* single, of 2 valves (or 0, with 2 bracteas, *Moq.*). *Stam.* 0. *Utricle* covered by the persistent enlarged *perianth*. *Seed* vertically compressed.—Named from *α*, *not*, and *τρεφειν* to *nourish*. (The second kind of fertile flowers is always present; the first kind occurs in very few species.)

* *Fertile flowers, all very dissimilar from the sterile ones; their perianth of 2 valves, united to the apex, more or less toothed. Seed acute. Radicle superior.* **Obione.**

1. A *portulacoïdes* L. (*shrubby O.*, or *Sea Purslane*); stem shrubby, leaves obovate-lanceolate entire silvery-white, perianth of the fruit very shortly stalked inversely triangular rounded below 3-toothed at the apex. *E. B.* t. 261. Halimus *Wallr.* Obione *Moq.*

Muddy sea-shores, England and Ireland. Muil of Galloway, and near Helensburgh, Scotland. ♃. 8—10. — *Stem* 1—2 ft. and more high, with small, yellowish *flowers* in axillary *spikes*.

2. A. *pedunculáta* L. (*stalked Sea O.*); stem herbaceous zigzag with spreading branches, leaves obovate-lanceolate upper ones narrower, perianth of the fruit cuneate on long stalks 3-lobed at the apex, the lateral lobes recurved larger than the middle ones. *E. B.* t. 232. Halimus *Wallr.* Obione *Moq.*

On the east and south coast of England, in muddy salt-marshes, Kent, Suffolk, Norfolk, Lincoln, and Cambridgesh. Cunnamara, Ireland. ☉. 7, 8. — Whole *plant* covered with scaly mealiness. This is well distinguished from all the other species by its long *peduncles* and the peculiar shape of the seed-bearing *perianth*, especially when the *fruit* is ripe.

** *Fertile flowers all very dissimilar from the sterile ones; their perianth of 2 valves nearly distinct, or united to the middle. Seed lenticular. Radicle inferior or lateral.* **Atriplex.**

† *Stem uniformly (buff-) coloured.*

3. A. *laciniáta* S. (*frosted Sea O.*); stem herbaceous spreading procumbent, leaves triangular rhomboidal dentate-sinuate very mealy beneath, spike of sterile flowers dense leafless, fertile flowers axillary, perianth of the fruit rhomboidal 3-ribbed and

often tubercled at the back, seeds finely granulated. *E. B.* t. 165. A. rosea *Moq.* A. arenaria *Woods.*

Sandy sea-shores not uncommon. ⊙. 7, 8. — Whole *plant* hoary. A distinct species which we have no hesitation in considering to be that of Linnæus, not only on the authority of one authentic specimen in his herbarium, but because his "flores fœminei axillares geminæ" clearly apply to this and not to *A. laciniata* of Moquin-Tandon, and of most continental botanists.

†† *Stems green, with resinous usually reddish stripes.*

‡ *Lower leaves with lateral, spreading or ascending lobes.*

4. A. *Babingtóni* Woods (*spreading-fruited O.*); "stem herbaceous spreading procumbent or ascending with spreading branches, leaves mealy ovate-triangular somewhat 3-lobed unequally sinuate-dentate, upper ones lanceolate dentate and 3-lobed at the base or nearly entire, perianth of the fruit rhomboid acute toothed with 2 irregular rows of tubercles on the back, spikes axillary and terminal few-flowered, seeds tubercular rugose." A. rosea *Bab.* in *E. B. S.* t. 2880.

Sea-coast, common. ⊙. 7—9. — Probably not the *A. rosea* of Linnæus, of which he himself does not appear to have seen specimens; and it is not that of Moquin-Tandon. It is a most variable plant, and we doubt if it be distinct from the next, with which Smith and most others united it; but we give Mr. Babington's character. Mr. Woods suspects it may be the *A. crassifolia* Moq. from the Altaic mountains, which however seems, from the description, merely *A. patula.*

5. A. *pátula* L. (*spreading Halberd-leaved O.*); stem herbaceous erect or spreading, lower leaves triangular-hastate with two horizontally spreading lobes irregularly toothed, the upper ones nearly entire, perianth of the fruit toothed or entire on the margin slightly tuberculate on the back, spikes nearly simple interrupted, seeds mostly dark brown and wrinkled, *E. B.* t. 936. A. hastata *Sm.*

Cultivated and waste ground and in salt-marshes, common. ⊙. 6 — 10. — *Branches* long, striate. *Flowers* in small *clusters* on long interrupted axillary *spikes.* *Perianth* of the fruit variable: in each spike there are usually two kinds, those below are larger with a dark brown wrinkled *seed*, those towards the extremity smaller with a black shining perfectly smooth *seed.* We quite agree with Moquin-Tandon that this is the *A. hastata* L.; while *A. patula* L., is, according to the Linnæan description, *A. angustifolia* Sm.; but as the specimen named *A. patula* in the Linnæan herbarium is the present species, we follow Smith's nomenclature.

6. A. *deltoidéa* Bab. (*triangular-leaved O.*); stem herbaceous prostrate or erect with ascending branches, lower leaves hastate-triangular unequally toothed, perianth of the fruit entire or

toothed usually muricate on the back, spikes nearly simple collected into a branched many-flowered panicle, seeds all shining smooth.—*α.* stem erect with ascending branches, leaves all triangular hastate toothed, perianth toothed muricate on the back. *E. B. S.* t. 2860.—*β.* stem erect or ascending with ascending branches, upper leaves subulate-hastate entire, perianth entire rough on the back. A. microsperma *W. et K.*—*γ.* stems and branches prostrate, upper leaves lanceolate entire, spikes only slightly branched. A. prostrata *Bouch.*

α. Cultivated and waste land in the south of England, not uncommon —*β.* near Bath. Belfast. —*γ.* sea-coast, rare. ⊙. 7—10.—*Seeds* uniform, black and wrinkled, not half so large as the wrinkled chestnut ones of *A. patula*, although similar to the small seed of that species, of which it may be only a variety.

7. A. *angustifólia* Sm. (*spreading narrow-leaved O.*); stem herbaceous erect or prostrate, lower leaves with two ascending lobes from a wedge-shaped base, upper ones lanceolate entire, seeds smooth and shining. — *α.* lower leaves entire, perianth of the fruit rhomboidal with ascending lateral angles entire smooth on the back, spikes nearly simple interrupted. *E. B.* t. 1774. —*β.* lower leaves sinuate-toothed, perianth of the fruit rhomboidal denticulate usually tuberculate on the back, spikes branched dense many-flowered. A. erecta *Huds.*: *E. B.* t. 2223.

Cultivated and waste ground. ⊙. 7—10.—Perhaps only a narrow-leaved var. of *A. patula.*

‡‡ *None of the leaves lobed.*

8. A. *littorális* L. (*Grass-leaved Sea O.*); stem herbaceous erect, leaves lanceolate entire or toothed, perianth of the fruit toothed muricate at the back.—*α.* leaves linear-lanceolate, perianth of the fruit ovate-rhomboid acute spreading at the point. *E. B.* t. 708.—*β.* leaves ovate-lanceolate, perianth of the fruit obcordate-triangular obtuse closed. A. marina *L.*

Muddy salt-marshes, chiefly on the east coast. ⊙. 7—9.—The under-sides of the *leaves* and the *flowers* are mealy; the latter grow in rather crowded, axillary and terminal *spikes*. Mr. Woods mentions that he has met with horizontal seeds in this species, which he supposes were produced by flowers similar to the sterile ones; he also states that the *var. α.* alone is found at Lewes, while *β.* is plentiful on the banks of the Thames.

**** Fertile flowers of two kinds.* Dichospermum.

9. A. **nítens* Rebent (*shining-leaved O.*): stem herbaceous erect branched, leaves triangular acuminate shining above glaucous beneath, lower ones cordate-hastate, upper deltoid somewhat auricled, uppermost lanceolate, perianth of the fruit ovate-acuminate entire smooth on the back thin and finely reticulated.

Sea-shore near Ryde, Isle of Wight; *Dr. Bromfield.* ⊙. 8, 9. — A large, coarse species, probably introduced: it is common in the east of Germany, but grows as far west as Hamburgh: *Woods.*

[*A. hortensis* L., a very closely allied species, has been found at Saffron Walden and in some other places, but cannot be said even to be naturalized.]

Tribe III. Salicorneæ. *Flowers uniform, perfect. Stem jointed.* (Gen. 4.)

4. Salicórnia *Linn.* Glasswort.

Perianth single, turbinate, fleshy, obscurely lobed, imbedded in an excavation of the *rachis*. *Stam.* 1—2. *Style* short. *Stigmas* bi-trifid. *Fruit* a *utricle*, included in the enlarged *perianth*. — Named from *sal*, *salt*, and *cornu*, a *horn;* from the horn-like branches and saline nature of the plants.

1. S. *herbácea* L. (*jointed G.*); stem herbaceous, articulations compressed somewhat thickened upwards and notched, spikes cylindrical slightly tapering at the extremity, seeds oval or oblong covered with hooked hairs. — *α.* stem erect. S. herbacea *E. Fl.* v. i. p. 2. S. annua *E. B.* t. 415. — *β.* stem procumbent. S. procumbens *E. B.* t. 2475.

Salt-marshes, plentiful. ⊙. 8, 9. — *Plant* leafless, much branched and jointed; articulations a little thickened upwards, very succulent, shrinking much when dry, in which state the upper extremity of each articulation forms a two-lobed membranous socket or short sheath, which receives the base of the articulation above it. *Spikes* of *flowers* dense, lateral and terminal, jointed like the stem, and bearing, at the base of every short articulation, on two opposite sides, a cluster of 3 *flowers*, each composed of a single *perianth*, apparently quite closed at the top, and pierced, as it were, by the bi- or tri-fid *stigma* and the single or two *stamens*,—when two, they appear in succession. *Perianth* of the *fruit* with a narrow circular wing near the summit. *Pericarp* thin and adhering to the *seed*, the integument of which is simple. Mr. Wilson observes that the central flower (in the *erect* var. at least) has *two* stamens, one placed below, the other above, the laterally compressed germen; and that the side-flowers have only *one*, placed above the germen.

2. S. *radícans* Sm. (*creeping G.*); stem woody procumbent and rooting, articulations compressed spreading and notched at the top scarcely thickened, spikes oblong obtuse, seeds nearly globose with hooked hairs. *E. B.* t. 1691. S. fruticosa *Sm.: E. B.* t. 2467.

Muddy sea-shores, rare; on the Norfolk and Sussex coasts. In the Isle of Sheppey, Kent. Near Newry, Ireland. ♃. 8, 9. — This plant requires more investigation in a recent state. Smith origi-

nally referred our form of it to the *S. fruticosa* Linn., and Moquin-Tandon makes it the *var. β.* of that species, which, however, seems to have tubercled and not hairy seeds. Upon these plants Mr. Joseph Woods has some valuable observations in the "Proceedings of the Linn. Society," vol. iii. p. 814., although we see no reason to admit more than two British species. — The various species of this genus, as well as others belonging to the same natural family, and growing abundantly on the coasts in the south of Europe and north of Africa, yield a vast quantity of soda, much employed in making both soap and glass, whence comes their English name, *Glasswort.*

Sub-Ord. II. SPIROLOBEÆ. *Embryo spiral; albumen none or in small quantity.*

Tribe IV. Suædeæ. *Seed with a double integument. Embryo in a flat spiral. Stem continuous.* (Gen. 5.)

5. Suæ'da *Forsk.* Sea-Blite.

Flowers usually perfect, bibracteated at the base. *Perianth* 5-partite, at length inflated and often fleshy (without appendages or a wing at the back). *Stam.* 5. *Style* 0. *Stigmas* usually 3. *Utricle* covered by the perianth. *Seed* lenticular; integument double, outer one crustaceous. *Leaves* semicylindrical. — Name: — *suæd* is the Arabic appellation of one of the species, all of which yield *Soda.*

1. S. *fruticósa* Forsk. (*shrubby S.*); leaves obtuse, styles 3 often combined at the base, seeds smooth shining vertical, stem erect shrubby. Salsola *L.: E.B.* t. 635. Chenopodium *Schrad.* Schoberia *Mey.*

On the Norfolk coasts, especially at Cley; and those of Suffolk, Dorset, Hants, Devon, and Cornwall, but rare. ♄. 7 — 10. — *Stem* 3 ft. high or more, with many erect, leafy *branches. Flowers* in small axillary clusters, sometimes solitary. *Perianth* unchanged in fruit, as in the following species.

2. S. *marítima* Dumort. (*annual S.*); leaves usually acute, styles 2, seeds reticulate-striate horizontal, stem herbaceous diffuse. Chenopodium *L.: E. B.* t. 633. Chenopodina *Moq.* Schoberia *Mey.*

Sea-shore, frequent. ☉. 7 — 9. — A much smaller plant than the last and annual. *Flowers* solitary, or two in the axils of the leaves, and each subtended by two small, ovate, acute, narrow *bracteas.* Moquin-Tandon separates his new genus *Chenopodina* from *Suæda* almost solely on account of the seeds being horizontal, not vertical.

Tribe V. Sodeæ. *Seed with a simple integument. Embryo in a conical spiral. Stems continuous or jointed.* (Gen. 6.)

6. Sálsola *Linn.* Saltwort.

Flowers perfect, bracteated at the base. *Perianth* single, inferior, 5-partite, persistent, enveloping the *utricle* with its base, and crowning it with its *limb* which has a broad scariose dorsal wing. *Stam.* 5. *Styles* 2. *Seeds* horizontal; integument simple, membranaceous. — Named from *sal, salt.* From many of this tribe alkaline salt is abundantly obtained, as implied by the name of our only British species.

1. S. *Káli* L. (*prickly S.*); stems herbaceous prostrate, leaves subulate spinous scabrous, flowers axillary solitary, segments of the enlarged perianth cartilaginous as long as their spreading roundish wings. *E. B.* t. 634.

Sandy sea-shores, frequent. ☉. 7. — *Stem* angled, very much branched. *Flowers* pale-greenish, sessile, with 3 leaf-like bracteas at the base of each.

Ord. LXXI. SCLERANTHACEÆ *Link.*

Perianth of 1 piece, tubular; *limb* 4—5-cleft. *Stamens* 1—10, perigynous, inserted into the mouth of the tube. *Ovary* superior, simple, 1-celled. *Styles* 2, or 1 emarginate at the apex. *Ovules* solitary, or rarely 2, suspended from the apex of a free filiform column or cord that arises from the bottom of the cell. *Fruit* a *utricle*, inclosed within the hardened tube of the perianth. *Seed* solitary. *Embryo* cylindrical, curved round the farinaceous *albumen.*—*Small inconspicuous* herbs. Leaves *opposite*, *without* stipules. Flowers *minute.*

1. Scleránthus *Linn.* Knawel.

Perianth 5-cleft. *Stam.* 10; 5, or more, frequently abortive or wanting. *Styles* 2 —Named from σκληρος, *hard* and ανθος, a *flower*, from the indurated nature of the floral covering.

1. S. *ánnuus* L. (*annual K.*); calyx of the fruit with erect or erect-patent rather acute segments edged with a narrow white membrane, stems spreading, root annual. *E. B.* t. 351.

Corn-fields, frequent. ☉ or rarely ♂. 7. — *Stems* many, much branched in a dichotomous manner, slender, green, subpubescent, straggling. *Leaves* linear-subulate, keeled, opposite and combined at the base by a membranous fringed margin. *Flowers* green, inconspicuous, in axillary, leafy clusters. *Perianth* urceolate, ribbed, with 5 ovate-lanceolate teeth, spreading when in flower, almost erect in fruit.

We have seen foreign specimens (from Hamburgh) precisely intermediate between this and the next.

2. S. *perénnis* L. (*perennial K.*); calyx of the fruit with obtuse closed segments edged with a broad white membrane, stems procumbent, root perennial. *E. B.* t. 352.

Open dry sandy fields, in Norfolk and Suffolk. ♃. 8—10.—*Stems* simple or irregularly branched, glaucous. The broad white membrane gives the *flowers* a variegated appearance.

Ord. LXXII. POLYGONACEÆ *Juss.*

Sometimes monœcious or diœcious. *Perianth* free, divided, the segments often in a double row. *Stamens* definite, but varying in number, inserted into the base of the perianth. *Ovary* superior, with 2 or more *styles* or sessile *stigmas*. *Achene* frequently 3-angular or lenticular, with one erect *seed*. *Embryo* in a farinaceous *albumen*, often lateral.—Herbaceous, *rarely* shrubby plants, *with sheathing stipules!*—The stems and leaves are acid and astringent; the roots, in general, nauseous and purgative; while the seeds are very farinaceous and esculent. The *True Rhubarb* belongs to this Order: it is a species of *Rheum* not clearly ascertained.

1. Polygonum. Perianth 5-partite. Styles 2—3. Achene wingless, compressed or triquetrous.
2. Rumex. Perianth 6-partite; the three inner segments at length larger, connivent, and covering the triquetrous wingless achene. Styles 3.
3. Oxyria. Perianth 4-partite: the two inner segments larger. Styles 2. Achene compressed, with a membranous wing, at length larger than the perianth.

1. Polýgonum *Linn.* Persicaria, Bistort, Knot-grass, and Buck-wheat.

Perianth single, in 5 deep, coloured, persistent segments. *Stam.* 5—8. *Styles* 2—3. *Achene* compressed or trigonous.—Named from πολυς, *many*, and γονυ, a *knee* or *joint*; from the numerous joints of the stem.

* *Styles 3, and the fruit triquetrous. Stem simple, with one terminal spiked raceme. Stipules truncated. Root thick and short.* Bistort.

1. P. *Bistórta* L. (*common B.* or *Snakeweed*); raceme dense cylindrical, leaves subcordate-ovate waved, the radical ones with a winged foot-stalk. *E. B.* t. 509.

Moist meadows in various parts of England, Scotland, and Ireland, ♃. 6—9.—*Stem* 1—1½ foot high. Upper *leaves* with long sheaths. *Flowers* flesh-coloured, on short foot-stalks, with small *bracteas* at their base. *Stam.* 8. *Styles* 3. *Root* large, tortuose, very astringent.

2. P. *víviparum* L. (*viviparous alpine B.*); spike linear lax bulbiferous at the base, leaves linear-lanceolate the lower ones elliptical petiolate their margins revolute, foot-stalks not winged. *E. B.* t. 669.

Mountain pastures in the north of England, and abundant on the Highland mountains of Scotland. ♃. 6 — 7. — *Stem* 4 — 8 inches high, slender. *Spike* linear; lower part of it generally bearing little viviparous *bulbs* of a fine red colour. *Stam.* 8. *Styles* 3. *Periauth* pale flesh-coloured, almost white. — This species increases much by the bulbs, and little, if at all, by seed, its triquetrous germen proving usually abortive.

** *Styles* 3. *Achene triquetrous. Stem branched. Flowers axillary. Stipules* 2-*lobed, at length torn. Root fibrous.* Knotgrass.

3. P. *aviculáre* L. (*common K.*); leaves elliptic-lanceolate, stipules much shorter than the internodes with few distant simple nerves, stem herbaceous, achene about as long as and covered by the perianth striate with raised points. *E. B.* t. 1252.

Waste places and way-sides, abundant. ☉. 5 — 9. — A most variable species.

4. P. *Robérti* Lois. (*Robert's K.*); leaves distant elliptic-lanceolate flat, stipules much shorter than the internodes with very few distant simple nerves, stem procumbent herbaceous, achenes longer than the perianth protruded quite smooth and shining. P. Raii *Bab.*: *E. B. S.* t. 2805. P. maritimum *Ray Syn.* p. 147.

Sandy sea-shores in the west of England, Wales, and Scotland, and about Dublin. ☉. 7 — 9. — A large straggling species, appearing, as Mr. Babington well observes, exactly intermediate between *P. aviculare* and *P. maritimum.*

5. P. *marítimum* L. (*Sea-side K.*); flowers axillary, leaves crowded elliptic-lanceolate fleshy glaucous revolute at the margin, stipules about as long as the internodes with numerous branched nerves, stem procumbent woody below, achene longer than the perianth protruded quite smooth and shining. *E. B. S.* t. 2804.

Christ-Church Head, on the sandy shore towards Muddiford, Herm Sands and Jersey; and Grand Havre, Guernsey. Caroline Park, near Edinburgh (only one plant found), *Rev. Mr. Little.* Killiney Bay, near Dublin. ♃. 8, 9.

*** *Styles* 3. *Achene triquetrous. Flowers panicled or racemose. Stipules oblique at the summit. Root fibrous.* Buckwheat.

† *Stem erect, with cymose panicles.*

6. P. **Fagopýrum* L. (*common B.*); leaves cordate-sagit-

tate, stem nearly upright without prickles, angles of the fruit even. *E. B.* t. 1044.

Dunghills and about cultivated land. ⊙. 7, 8. — *Stem* nearly erect, flexuose, 1 foot high, branched. *Flowers* in spreading *panicles*, terminal and lateral, pale-reddish. *Stamens* 8. *Cotyledons* large, foliaceous, contorted and plaited. An excellent food for poultry.

†† *Stems twining. Flowers racemose.*

7. P. *Convólvulus* L. (*climbing B.*); leaves cordate-sagittate, stem twining angular, segments of the perianth bluntly keeled (rarely winged), fruit opaque striate with minute points. *E. B.* t. 941.

Corn-fields, frequent. ⊙. 7 — 9. — Very long, climbing. *Spikes* lateral and leafy, of 4 whorled greenish *flowers*. The specimens with a winged perianth are of rare occurrence, and chiefly met with in the Isle of Wight.

8. P. *dumetórum* L. (*Copse B.*); leaves cordate-sagittate, stem twining striate, segments of the perianth with a membranous wing, fruit quite smooth and shining on the surface. *E. B. S.* t. 2811.

South of England, but seldom found above a year or two in the same place. Wood at Wimbledon, also at Reigate, andin hedges between Woking Common station and Guildford, Surrey; Torvick, Trotton, and hedge by Wood's Nursery near Maresfield, Sussex; Petersfield, Hants; Framfield, Dorsetsh.; near Keynsham, Somersetshire. ⊙. 8, 9. — Too closely allied to the winged variety of the last species.

**** *Styles mostly 2. Achene compressed or triquetrous. Stem usually branched. Stipules truncate.* Persicaria.

† *Creeping, perennial.*

9. P. *amphíbium* L. (*amphibious P.*); creeping, stamens 6, styles 2, spike dense oblong-ovate, achene smooth shining, leaves petiolate, stipules membranous narrow, *E. B.* t. 436. — *α. aquaticum*; leaves floating broadly lanceolate glabrous, spikes oblong. — *β. terrestre*; nearly erect, leaves narrow-lanceolate rough with short rigid appressed hairs on both sides, spikes ovate.

Margins of ponds, lakes, and ditches, and damp ground, frequent. ♃. 7, 8. — *Stem* 2 — 3 feet long, and scarcely branched when growing in the water. *Leaves* arising from long tubular *sheaths* or *stipules*, glabrous in *α.* but hispid in *β.* *Spikes* mostly solitary, terminal, of a bright rose-colour. The only perennial species of the *Persicaria* group.

†† *Root annual, fibrous.*

10. P. *Persicária* L. (*spotted P.*); stamens 6, styles 2—3 connected to the middle, spikes compact ovate-oblong cylindrical erect, peduncles nearly smooth, perianth glandular, achene compressed and gibbous on one side or triquetrous, leaves lanceolate (often spotted), stipules lax strongly fringed. *E. B.* t. 756.

Moist ground and waste places, frequent. ⊙. 7—10. — *Stems* erect, branched, 1—2 feet high. *Spikes* terminal and lateral, dense, greenish, the tips of the *flowers* rose-coloured. *Achene* either triquetrous or with a tendency to be so, as shown by the gibbous side. *Leaves* nearly sessile, usually glabrous, but there is a variety with hoary leaves (*P. incanum*).

11. P. *láxum* Reich. (*slender-headed P.*); stamens 6, styles 2 connected at the base, spikes usually elongated and slender erect, peduncles and perianths glandular and scabrous, achene compressed smooth and shining concave on both sides, stem ascending, leaves lanceolate slightly waved tapering at both ends glandular beneath, stipules lax shortly fringed, floral ones with a subulate point on one side. *Bab. in E. B. S.* t. 2822.

Woodford, Essex; Cambridge; Chalk Farm, London; Sussex. Jersey. ⊙. 7, 8. — Reichenbach himself seems disposed to consider this a hybrid; Mertens and Koch remark that they have seen forms of *P. lapathifolium* closely resembling it; and Mr. Babington, in *Fl. Sarn.*, says "he suspects it will be found to be a var. of *P. Persicaria.*" Dr. Meisner, we understand, considers it a mere variety of *P. nodosum.*

12. P. *lapathifólium* L. (*pale-flowered P.*); stamens 6, styles 2 distinct, spikes oblong-cylindrical dense erect, peduncles and perianth glandular and scabrous, achenes compressed smooth and shining concave on both sides, leaves ovate-lanceolate shortly petiolate, lower stipules not fringed, upper ones shortly fringed. *E. B.* t. 1382.

Fields and dunghills, frequent, ⊙. 7, 8 — *Stem* 1—1½ ft. high. A very variable species; but the above characters are tolerably constant. Sometimes the *stem* is spotted, and sometimes the *leaf* is hoary. The *flowers* are either pale green, almost white, or of a reddish tint. *Spikes* dense, terminal, and lateral. Mr. Babington has described this with 8 stamens; perhaps, therefore, the number is variable.

13. P. *míte* Schrank (*lax-flowered P.*); stamens 5, styles 2 (rarely 3) combined to the middle, spikes erect usually filiform lax, peduncles smooth, perianth without glands, achene lenticular compressed gibbous on one side slightly wrinkled shining, leaves lanceolate slightly waved, stipules hairy strongly ciliated without glands. *E. B. S.* t. 2867.

About London, Cambridge, and York. ⊙. 8. — Allied to *P. minus*, differing from it in the greater size, broader leaves, and larger

flowers, and fruit, and from *P. Persicaria* by the lax spikes and slightly wrinkled *achenes*. *Flowers* red.

14. P. *mínus* Huds. (*small creeping P.*); stamens 6, styles 2 combined to above the middle, spikes slender lax erect, peduncles smooth, perianth without glands, achene lenticular-compressed smooth and shining, leaves linear-lanceolate plane very shortly petiolate, stipules ciliated without glands. *E. B.* t. 1043.

On gravelly, watery commons; about London, and in Worcestershire, Cheshire, and Lancashire. Very rare in Scotland. Near Cork, Ireland. ☉. 8, 9. — Allied to *P. Hydropiper*, but much smaller, usually procumbent and rooting at the base, with upright *spikes*, narrower *leaves*, and nearly undivided *stigmas*.

15. P. *Hydrópiper* L. (*biting P.*); stamens 6, styles 2 nearly distinct, spikes lax filiform at first drooping, peduncles smooth, perianth glandular, achene lenticular-compressed dotted opaque, leaves lanceolate waved, stipules mostly with scattered glands shortly fringed. *E. B.* t. 989.

Frequent by the sides of lakes and ditches. ☉. 8, 9. — *Stem* 1 — 3 feet high, erect. Remarkable for its slender, long, more or less drooping *spikes* of distant, reddish *flowers*; they are lateral and terminal, and are sometimes at length erect.

2. Rúmex *Linn.* Dock and Sorrel.

Perianth 6-partite: the 3 inner *segments* (of the fruit) large, connivent. *Stam.* 6. *Styles* 3: *stigmas* multifid. *Achene* triquetrous, covered by the enlarged inner sepals, which often bear tubercles.—Name of unknown origin.

* *Plants not acid. Flowers perfect, or monœcious.* Lapathum. Dock.

1. R. *Hydrolápathum* Huds. (*great Water D.*); enlarged sepals ovate-deltoid reticulated entire each with a tubercle, leaves lanceolate the lower ones cordate at the base, petiole flat not margined above, whorls crowded mostly leafless. R. aquaticus *Sm.*: *E. B.* t. 2104.

Ditches and river-sides, frequent in England, rare in Scotland. ♃. 7, 8. — The largest of our *Docks*, 3 — 5 feet high; some of the lower *leaves* 1½ ft. long. *Root* large, very astringent. Enlarged *sepals* with prominent veins, and large oblong tubercles.

2. R. *críspus* L. (*curled D.*); enlarged sepals broadly cordate entire or crenulate reticulated, one principally with a perfect large tubercle, leaves lanceolate waved acute, upper whorls leafless. *E. B.* t. 1998.

Way-sides and near houses, pastures, &c., frequent. ♃. 6 — 8. — *Stem* 2 or 3 feet high. *Lower leaves* the broadest, all waved and

crisped at the margins. *Whorls* of *flowers* very numerous and crowded. Here the enlarged *sepals* are truly cordate. There seem to be two forms of this plant, one on the sea-shore conspicuous by its large pale tubercles; the other and more usual kind having them orange-coloured.

3. R. *praténsis* Mert. et Koch (*Meadow D.*); enlarged sepals unequal cordate dilated toothed at the base with a small entire triangular point, one principally with a tubercle, leaves oblong-lanceolate waved, clusters nearly leafless, whorls distinct. *Borr.* in *E. B. S.* t. 2757.

Marshes, in several counties of England. Berwick-upon-Tweed; Killen; Glen Farg. ♃. 6, 7. — Allied to *R. crispus*, but the clusters are less crowded, the enlarged sepals are unequal in size and more distinctly toothed, and the leaves are broader and less curled; also allied to *R. obtusifolius*, but is distinguished by the triangular, not lingulate, entire portion of the enlarged sepals. Mr. Babington mentions that the enlarged sepals are sometimes all equally tubercled. All the specimens we have seen from this country appear to be hybrids between the last and the next species.

4. R. *obtusifólius* L. (*broad-leaved D.*); enlarged sepals ovate or oblong-triangular obtuse toothed at the base, one principally bearing a tubercle, root-leaves ovate-cordate obtuse, upper ones oblong or lanceolate, stem roughish. *E. B.* t. 1999.

Way-sides and waste-places, too frequent. ♃. 7—9. — *Stem* 2—3 feet high. *Whorls* rather distant, lower ones somewhat leafy. Distinguishable by its broad and obtuse radical *leaves*, which are generally crisped at the margins. The entire terminal part of the enlarged sepals is, as Mr. Borrer observes, mostly oblong or almost lingulate. *Stem* scabrous between the elevated lines or ridges.

5. R. *aquáticus* L. (*grainless Water D.*); enlarged sepals broadly cordate entire or waved membranous reticulated without tubercles, leaves lanceolate, the lower ones cordate-oblong crisped and waved, whorls crowded mostly leafless. *Hook.* in *E. B. S.* t. 2698. R. domesticus *Hartm.*

Moist places. North of England and Scotland, not uncommon. ♃. 7, 8. — Our plant comes very near *R. crispus*, but the enlarged sepals are quite destitute of grains or *tubercles*. Between this and the last there is a hybrid not uncommon in Kinross-shire, particularly in the parish of Orwell, which sometimes bears a few perfect seeds; the enlarged sepals are membranous, reticulated, broadly cordate, toothed with sometimes a short blunt entire ovate point, one principally bearing a tubercle; it seems to be *R. conspersus* Hartm.

6. R. **alpínus* L. (*alpine D.* or *Monk's Rhubarb*); enlarged sepals cordate-ovate membranous reticulated obscurely toothed at the margin, one usually bearing a small tubercle, leaves broadly cordate ample obtuse, whorls leafless crowded, flowers monœcious. *E. B. S.* t. 2694. R. cordifolius *Horn.*

Road-side from Helensburgh to the head of the Gare Loch, and

in 2 or 3 stations in that neighbourhood; Glen Luss; near Dollar; Glen Farg, Perthshire. One-ash, Derbyshire. ♃. 7.—Its *root* was formerly employed in place of *Rhubarb*, and much cultivated by the monks and hermits, near whose former abodes it is principally met with. *Leaves* a span broad, cordate, very obtuse, wrinkled, and reticulated; *upper ones* ovate, lanceolate; *whorls* of *flowers* very dense.

7. R. *sanguíneus* L. (*bloody-veined*, and (β.) *green-veined D.*); enlarged sepals narrow-oblong obtuse entire, one at least bearing a tubercle, leaves ovate-lanceolate, lower ones somewhat cordate, whorls distant on long generally leafless branches.—α. leaves with bright red veins. R. sanguineus *L.: E. B.* t. 1533.—β. leaves with green veins. R. viridis *Sibth.*

Shady pastures, woods, and road-sides.—α. rare.—β. more frequent. ♃. 7.

8. R. *conglomerátus* Murr. (*sharp D.*); enlarged sepals linear-oblong obtuse entire or obscurely toothed all bearing a tubercle, leaves oblong pointed, lower ones cordate or rounded at the base, whorls distant leafy. R. acutus *Sm.: E. B.* t. 724.

Watery places, not uncommon. ♃. 6—8.—Much resembling *var.* β. of the last species, and appearing to differ chiefly in its more leafy *whorls* and enlarged *sepals* all constantly tubercled. Smith considers this to be the *R. acutus* L.; but it can scarcely be the species known under that name on the Continent, which has ovate rather acute enlarged sepals, each with a very large red tubercle. It is the *R. Nemolopathum* of Campdera and most Continental botanists, but doubtfully of Ehrhart and Linnæus fil., which is supposed by Smith to be *var.* β. of the last.

9. R. *púlcher* L. (*Fiddle D.*); enlarged sepals triangular ovate reticulated with prominent veins deeply toothed, one of them principally bearing a tubercle, lower leaves panduriform or cordate oblong obtuse, upper ones lanceolate acute, stem spreading. *E. B.* t. 1576.

Pastures, way-sides, &c. ♃. 6—8.—*Stems* procumbent; branches very straggling; *whorls* distant, on slender leafy branches.

10. R. *marítimus* L. (*golden D.*); enlarged sepals narrow deltoid acute, each fringed with 2—4 setaceous teeth and bearing a narrow oblong tubercle, whorls much crowded many-flowered leafy, leaves linear-lanceolate. *E. B.* t. 725.

Marshes, principally near the sea. ♃. 7, 8.—Well distinguished from every preceding species by its narrow *leaves*, excessively crowded *flowers*, bright, almost orange-coloured, enlarged *sepals*, and their setaceous, almost spinous *teeth*.

11. R. *palústris* Sm. (*yellow Marsh D.*); enlarged sepals lanceolate rather acute, each with 2—3 short setaceous teeth near the base and bearing a narrow oblong tubercle, whorls

remote, leaves linear-lanceolate. *E. B.* t. 1932. R. Steinii. *Koch.*

Marshy places, remote from the sea; near the Vault, east of Dunbar; *J. Mackay.* ♃. 7—9.— Nearly allied to the last, from which Sir J. E. Smith considers it to be permanently distinct in the form of the enlarged sepals, and in the number, shape, length, and situation of the *teeth* which border them. Mr. Babington considers *R. palustris* Koch. to be *R. limosus* Thuil., but it has not been found in this country, unless it be, as supposed by some, the *Gold Dock* of Petiver.

** *Plants acid. Flowers diœcious.* Acetosa, *or* Sorrels.

12. R. *Acetósa* L. (*common S.*); outer sepals reflexed, enlarged ones orbicular-cordate entire membranous reticulated with a minute spherical tubercle at the base, leaves oblong-sagittate. *E. B.* t. 127.?

Meadows and pastures, frequent. ♃. 5—7.— *Stem* 1—2 feet high. *Petals* becoming large, purplish, orbicular-cordate, obtuse, membranous, reticulated with veins; *tubercles* very small, almost obsolete. Sir J. E. Smith says the enlarged sepals are ovate, but he appears to have described a cultivated species, probably the *R. oxyotus* Campd.

13. R. *Acetosélla* L. (*Sheep's S.*) sepals ascending, inner ones scarcely enlarged ovate without tubercles, lower leaves lanceolate-hastate lobes entire. *E. B.* t. 1674.

Dry pastures, frequent. ♃. 5—7.— Variable in its height, from 2—10 inches, and in the form of its *leaves;* for, frequently, *only* the *radical* ones are of the shape above described, at other times many of the *cauline* ones are so too; the rest are lanceolate, more or less petiolate, entire. Every part is much smaller than in the last species. In very dry situations, and at the end of summer, the whole plant becomes of a rich red colour.

[R. *scutátus* L., the French or Garden Sorrel, has been observed near Edinburgh, Hamilton, and several other places, having escaped from cultivation.]

3. Oxýria *Hill; R. Brown.* Mountain-Sorrel.

Perianth 4-partite, the two interior segments in front scarcely longer than the others, spreading. *Stamens* 6. *Styles* 2; *stigmas* multifid. *Achene* compressed, surrounded with a membranous wing, much longer than the sepals.— Named from ὀξυς, *sharp* or *acid*, in allusion to the acid flavour.

1. O. *renifórmis* Hook. (*Kidney-shaped M.*) O. acida *Br.* Rumex digynus *L.: E. B.* t. 910.

North of England, Wales and Scotland, abundant in alpine situations, especially amongst moist rocks and within reach of the spray of cascades. ♃. 7, 8.— *Stems* 8—10 inches high, with rarely

more than one leaf, often naked. *Radical leaves* numerous, all reniform, with a more or less evident obtuse sinus at the apex, on long foot-stalks, having membranaceous *stipules* at their base. *Racemes* and *peduncles* branched, with minute, ovate, membranous *bracteas* at the base of each ramification. *Pedicels* thickened upwards. *Flowers* erect, small. *Stam.* 6, shorter than the petals. *Achene* with a remarkably broad winged border, tipped with the *styles* situated in rather a deep notch, and having at the base the sepals, none of which are enlarged as in *Rumex*. The leaves yield a most agreeably acid flavour, much resembling that of *Wood-Sorrel* (*Oxalis Acetosella*).

Ord. LXXIII. THYMELACEÆ *Juss.*

Perianth free, tubular, often coloured, 4—5-cleft. *Stamens* inserted upon the tube, definite, when equalling in number the segments of the perianth opposite to them. *Anthers* 2-celled opening longitudinally. *Ovary* 1, free, 1-celled, with one pendulous *ovule*. *Style* 1, and *stigma* 1, undivided. *Fruit* an *achene*, *berry*, or *drupe*. *Seed* 1, pendulous. *Albumen* none, or thin and fleshy. *Radicle* superior.—Shrubby, *without* stipules. —An Order, remarkable for the tenacious character of the inner bark, which is frequently made into paper, especially in India. *Lace-bark* is the same substance of *Lagetta lintearia*, and is composed of layers of beautifully reticulated fibres. The bark of all is caustic, acting upon the skin as a vesicatory, and causing excessive pain if chewed.

1. Dáphne *Linn.* Mezereon and Spurge-Laurel.

Perianth single, often coloured, 4-fid. *Stam.* 8. *Fruit* a *berry*. —Named in allusion to the Nymph *Daphne*, who was changed into a *Laurel*, some of the plants of this genus having the habit of Laurels.

1. D. **Mezéreum* L. (*common M.*); flowers subternate lateral sessile appearing before the deciduous lanceolate leaves, tube of the perianth hairy. *E. B.* t. 1381.

Rare, in woods in England. Hampshire (perhaps truly wild) Sussex, Suffolk, Staffordshire, Worcestershire, Berkshire, and Oxfordshire. ♄. 2—4.—The well-known *Mezereon* of our gardens, where its early blossoms and delightful fragrance attract general favour. It forms a bushy *shrub*, bearing numerous purple *flowers* which appear before the *leaves*, and red *berries* nestled among the foliage. *Flowers* sometimes white.

2. D. *Lauréola* L. (*common S.*); racemes axillary of about 5 glabrous drooping bracteated flowers, leaves lanceolate attenuate at the base glabrous evergreen. *E. B.* t. 119.

Woods, thickets, and hedges throughout England, especially in a clay soil. Rare in Scotland, and scarcely indigenous; about Rosslyn and Bothwell. ♄. 1—5. — *Stem* rather stout, erect, 1 — 3 feet high, but little branched, naked below, leafy above, and hence bearing some resemblance to a Palm. *Flowers* drooping, each accompanied by an ovate concave *bractea*. *Berry* ovate, bluish-black, said to be poisonous to all animals except birds.

** *Ovary inferior.* (Ord. LXXIV.—LXXV.)

Ord. LXXIV. SANTALACEÆ *Br.*

Perianth adnate with the ovary; its *limb* 3—5-cleft, with a valvular æstivation. *Stamens* 3—5, opposite to the segments of the perianth, epigynous. *Ovary* 1-celled, with 1—4 *ovules*, pendulous from near the summit of a free central *placenta*. *Style* 1. *Stigma* often lobed. *Fruit* hard, dry, and somewhat drupaceous, 1-seeded. *Albumen* fleshy, with the *embryo* in its axis.—Trees, shrubs, *or* herbaceous plants. Leaves *alternate or nearly so, without stipules*. Flowers *small*.—The true *Sandal-wood* of commerce is *Santalum album;* that of the Sandwich Islands, *Santalum Freycinetianum*. As in the preceding nearly allied Order of Thymelaceæ, the bark is remarkably tough.

1. Thésium *Linn.* Bastard-Toadflax.

Perianth 4—5-cleft, persistent. *Stamens* with a small fascicle of hairs at their base. *Stigma* simple. *Drupe* crowned with the persistent perianth.—Name: Θησεια were the games instituted in honour of *Theseus*, and a plant, used to form the crown then competed for, obtained the name Θησειον, — but from Pliny's description it was very different from ours.

1. T. *linophýllum* L. (*Lint-leaved B.*); stems procumbent or ascending, leaves linear-lanceolate 1-nerved, racemes simple or panicled leafy, peduncles and pedicels with 3 bracteas, pedicels usually as long as the flower in fruit spreading, their angles and the edges of the bracteas and upper leaves denticulate-scabrous, fruit oval-oblong. *E. B.* t. 247. T. humifusum *D C.*

Elevated chalky pastures, Cambridgeshire, Norfolk, Suffolk, and Dorsetshire. Ranmar hills, near Dorking, Surrey. ♄. 5—7.—A true parasite. *Roots* woody, sending forth several herbaceous, spreading leafy *stems*, terminated by the somewhat panicled leafy *racemes*. *Segments* of the *perianth* white. Fruit strongly ribbed, slightly reticulated.

2. T. * *húmile* Vahl (*erect B.*); stems erect branched from the base, leaves linear 1-nerved fleshy, racemes spicate, flowers nearly sessile tribracteated.

Near Dawlish, Devonshire; *Mr. C. C. Babington.* ♃. 7, 8. — We have seen no British specimen of this species; Vahl's plant was obtained from the north of Africa, and it is most unlikely to be indigenous to England. *Fruit*, according to the descriptions given, similar to the last, but more reticulated.

Ord. LXXV. ARISTOLOCHIACEÆ *Juss.*

Perianth below adnate with the ovary, above free, campanulate or tubular, with an usually irregularly lobed and often dilated *limb*. *Stamens* 6—10 or 12, epigynous. *Ovary* 3—6-celled: *ovules* numerous. *Style* simple. *Stigma* rayed. *Fruit* 3—6-celled, many-seeded. *Albumen* fleshy, with the minute *embryo* at its base.—Herbs *or* shrubs, *often climbing*. Leaves *alternate*. Wood *without concentric zones*.—Active emmenagogues.

1. Aristolochia. Perianth tubular, very oblique: anthers 6, sessile on the style.
2. Asarum. Perianth campanulate, equal, 3-cleft. Stamens 12.

1. Aristolóchia *Linn.* Birthwort.

Perianth tubular, often swelling at the base, the *mouth* dilated on one side. *Anthers* 6, sessile on the short *style*. *Stigma* with 6 lobes. *Capsule* 6-celled.—Name originating in its supposed medicinal virtues.

1. A. * *Clematítis* L. (*common B.*); creeping, stem erect simple, leaves heart-shaped stalked glabrous, flowers aggregated upright, lip oblong shortly acuminate. *E. B.* t. 398.

Naturalized among old ruins in the E. and S. of England. ♃. 6—9. — *Flowers* pale yellow, swollen at the base; the swollen part covered on the inside with stiff hairs pointing downwards. When the flower is expanded it is not uncommon for a little insect (*Tipula pennicornis*) to enter it, the stiff hairs preventing its egress until it has brushed off the pollen from the anthers upon the stigma: the perianth then withers, the hairs become flaccid, and the insect makes its escape.

2. A'sarum *Linn.* Asarabacca.

Perianth campanulate, 3-cleft. *Stam.* 12, from the top of the *germen*. *Stigma* with 6 lobes. *Caps.* 6-celled.—Named

from *a*, *not*, and σειρα, a *band;* because it was rejected from the garlands of flowers employed by the ancients.

1. A. **Europæ'um* L. (*Asarabacca*); leaves binate reniform obtuse. *E. B.* t. 1083.

Woods in the north. Lancashire, Westmoreland, and near Halifax. Near Linlithgow. ♃. 5. — *Stem* very short. *Leaves* 2, petiolate, shining; from the axil of these 2 leaves springs a solitary, rather large, drooping *flower* borne upon a short foot-stalk, of a greenish-brown colour and coriaceous substance. *Segments* of the *perianth* incurved. *Filaments* produced beyond the cells of the *anthers*, as in the genus *Paris*. *Roots* aromatic, and said to be purgative and emetic.

II. *Flowers generally separated, monœcious or dicœcious.* (Ord. LXXVI.—LXXXVII.)

* *Flowers scattered or tufted. Ovary superior.* (Ord. LXXVI.—LXXXI.)

Ord. LXXVI. EMPETRACEÆ *Nutt.*

Dicœcious. *Perianth* of 4—6 hypogynous persistent scales in two rows (often surrounded by several imbricated similar bracteas); scales of the inner row (*petals?*) alternating with those of the outer, rarely united into one piece. *Stamens* 2—3, opposite to the scales of the outer row. *Filaments* elongated, protruded, persistent. *Anthers* 2-celled, opening longitudinally. *Ovary* free, on a fleshy disk, 2—9-celled: *ovules* solitary, erect or ascending from near the base of the cell. *Style* 1, short. *Stigma* rayed, with as many or twice as many divisions as there are cells; each division usually incised, rarely subulate and entire. *Fruit* fleshy, with 2—9 bony *nucules*. *Seeds* solitary, ascending. *Embryo* slender, in the axis of fleshy watery *albumen*. *Radicle* inferior.—*Small* shrubs, *with heath-like leaves, without stipules, and with small flowers:* — of dubious affinity.

1. E'mpetrum *Linn.* Crow-berry.

Barren fl. Perianth of 6 scales (with external imbricating similar *bracteas*), of which the 3 inner are spreading, and petaloid. *Stam.* 3. *Rudiment* of a *pistil*, with a many-cleft *stigma*. —*Fertile fl. Perianth* as in the barren. *Germen* globose. *Style* short. *Stigma* dilated, peltate, 6—9-rayed; rays laciniate. *Fruit* globose, with 6—9 *seeds*.—Named from εν, *in*, and πετρος, a *stone;* growing in stony places.

1. E. *nigrum* L. (*black C.*, or *Crake-berry*); procumbent, leaves linear-oblong, stigma with 9 rays. *E. B.* t. 526.

Mountainous heaths in the North, abundant. ♀. 4—6. — A small procumbent, much-branching *shrub*, whose *leaves* have their margins so recurved as nearly to meet behind, leaving only a white central line. *Flowers* axillary towards the summit of the branches, small, purplish. *Berries*, or rather *drupes*, black, clustered, affording abundant food to the moor-game.

Ord. LXXVII. EUPHORBIACEÆ *Juss.*

Anthers and *pistils* in distinct flowers. *Perianth* free, 3-4 (or more) cleft, or wanting. —*Barren flowers. Stamens* 1 or many. *Anthers* 2-celled. — *Fertile flowers. Ovary* 1, 2—3-celled. *Ovules* solitary or in pairs, pendulous. *Styles* 2—3. *Stigmas* 2—3, 2-lobed or compound. *Capsule* of 2—3, 1- or 2-seeded united *carpels*, usually bursting and separating with elasticity from the common axis, sometimes indehiscent or nearly so. *Seeds* suspended. *Embryo* in the axis of fleshy *albumen; cotyledons* large, flat; *radicle* superior. — Stems *herbaceous or woody*. Leaves, *alternate, opposite, or whorled, or alternate, sometimes none.* — Acrid, often milky vegetables, yielding food and poison, medicine, dye, and caoutchouc or India-rubber. The embryo is powerfully acrid and dangerous, the albumen innocuous and even eatable. *Castor oil* is extracted from the seed of *Ricinus communis: Cascarilla* of Europe is *Croton Eleuteria: Oil of Tiglium* is from *Croton Tiglium*, a drastic purgative: *Turnsol*, a valuable dye and a highly acrid and drastic plant, is *Crozophora tinctoria. Janipha Manihot*, a most poisonous plant, affords the esculent *Cassava.* The *Caoutchouc* of Guiana is the inspissated juice of *Siphonia elastica. Euphorbia officinarum, Antiquorum* and *Canariensis* give the *Euphorbium* of the shops. — The above character of the Order applies to the British genera, but not to many foreign ones, which would require it to be much more extended, some having scales or petals within the perianth.

1. Mercurialis. Barren and fertile flowers separate. Perianth 3-partite. Stam. 9—12. Styles 2, simple. Caps. 2-celled, 2-seeded, loculicidal.
2. Euphorbia. Stamens (12 or more) and 1 pistil collected within a campanulate involucre. Styles 3, bifid. Capsule 3-celled, 3-seeded, thin and crustaceous, septicidal.
3. Buxus. Flowers aggregated, barren ones usually with a fertile central one. Perianth 4-partite, with 1—3 bracteas at the base. Stam. 4. Styles 3. Caps. 3-celled, 6-seeded, coriaceous, 3-beaked.

1. Mercuriális *Linn.* Mercury.

Dicœcious or monœcious. — *Barren fl. Perianth* single, tripartite. *Stam.* 9—12, without any rudiment of an ovary; *anthers* of 2 globose lobes. — *Fertile fl. Perianth* single, tripartite. *Filaments* 2—3, without *anthers*. *Styles* 2, simple. *Ovary* 2-celled, 2-ovuled. *Caps.* 2-celled; *cells* 1-seeded, bursting at the back. — So named, because the god *Mercury* is said to have discovered the virtues, of what kind soever they may be, of this plant.

1. M. *perénnis* L. (*perennial* or *Dog's M.*); creeping perennial and dicœcious, fertile flowers in stalked lax spikes, stem perfectly simple, leaves rough, *E. B.* t. 1872.

Woods and shady places abundant. ♃. 3—5. — About 1 foot high. *Leaves* mostly on the upper part of the *stem*, ovate, serrate. Both kinds of *flowers* are in axillary lax *spikes*. The *plant* when drying often becomes of a bluish or blackish green. — *M. ovata* Steud. et Hoppe has been found in hedge-rows near Hurstpierrepoint, Sussex; but "it is probably only a state of *M. perennis*:" Mitten in Lond. J. B. vii. p. 531.

2. M. *ánnua* L. (*annual M.*); fertile flowers whorled nearly sessile, stem with opposite branches, leaves glabrous, root fibrous annual. — *α.* dicœcious, leaves ovate or ovate-oblong, sterile flowers in lax spikes. *E. B.* t. 559 — *β.* monœcious, leaves lanceolate, sterile and fertile flowers whorled intermixed. M. ambigua *L. fil.: Bab. in E. B. S.* t. 2816.

Waste places about towns and villages, not common. *β.* Jersey. Isle of Wight. ☉. 7—11. — *Stem* about 1 foot high. *Var. β.* has certainly a very different appearance, but De Candolle and most authors do not consider it distinct.

2. Euphórbia *Linn.* Spurge.

Involucre of one piece, resembling a perianth, including one *fertile* and several *barren* flowers, 5-cleft with 4—5 glands alternating with the segments. — *Barren fl.* A single *stamen* without a perianth. — *Fertile fl.* A single *pistil* without a perianth (or rarely a very minute one). *Ovary* 3-lobed, 3-celled, 3-ovuled. *Styles* 3-cleft. *Caps.* separating elastically from the axis into 3 *cocci*, each bursting along the inner angle towards the apex and 1-seeded. — Named from *Euphorbus*, physician to Juba, king of Mauritania, who brought the plant into use.

* *Leaves with stipules. Glands of the involucre with small membranaceous processes beneath.*

1. E. *Péplis* L. (*purple S.*); stem procumbent forked, leaves oblong heart-shaped nearly entire, flowers axillary solitary,

glands of the involucre rounded on the outside, capsule smooth keeled, seeds smooth (white). *E. B.* t. 2002.

Sandy coast, in Devon and Cornwall. Channel Islands. ☉. 7—9. — Remarkable for its procumbent *stems*, of a glaucous hue, much tinged with purple, and stipuled *leaves*.

** *Leaves without stipules. Glands of the involucre without membranaceous processes beneath.*

† *Glands of the involucre roundish or transversely oval.*

2. E. *helioscópia* L. (*Sun S.*); umbel of 5 principal 3-fid and bifid branches, bracteas and leaves membranaceous obovate-cuneate serrate upwards, capsule glabrous, seeds reticulated and pitted. *E. B.* t. 883.

Abundant in waste and cultivated ground. ☉. 6—10. — The acrid milky juice is employed to destroy warts.

3. E. *platyphýlla* L. (*broad-leaved, warted S.*); umbel of about 5 principal 3-fid and bifid branches, bracteas cordate, leaves membranaceous broadly obovate-lanceolate acute finely serrulate, glands of the involucre (yellow) oval, capsule warted, seeds smooth (brownish). *Jacq. Ic. Rar.* t. 376. *α.* stamens 7—8 in each involucre, tubercles of capsule shortly conical. E. stricta *L.* and *E. Bot.* t. 333 (starved specimens). *β.* stamens rarely more than 2 in each involucre, tubercles of capsule prominent cylindrical. E. stricta *Koch.*

Corn-fields; Albourne, and near Henfield, Sussex (exactly corresponding with Jacquin's plant; Isle of Wight (frequent); Tunbridge Wells, and elsewhere in Kent; Essex, Cambridgeshire, Suffolk, and probably other counties. *β.* Limestone woods in Gloucestershire and Monmouthshire. ☉. 6—10. — *Leaves* and *capsules* glabrous or hairy. *Seeds*, in a variety or species called *E. pubescens*, rough with minute points. In *β.* the involucre, capsule, and seeds are only half the size of those of *α.*, but we fear that and the above characters, which we have taken from Mr. Babington, are not sufficient to prove its claims to specific distinction.

4. E. *Hibérna* L. (*Irish S.*); umbel of about 5 principal branches, bracteas and leaves ovate or elliptical entire, glands of the involucre 4 (purple) kidney-shaped, with intermediate rounded lobes, capsule warted glabrous, seeds smooth. *E. B.* t. 1337.

In hedges and thickets, in the south of Ireland. Between Feversham and Sittingbourne, Kent. Isle of Wight; East Lynn river, near Brendon, N. Devon; and at Lynmouth. 4. 5—6. — *Stem* 1½ — 2 feet high.[1]

[1] According to the late Dr. Taylor, this plant is extensively used by the peasantry of Kerry for poisoning, or rather stupifying, fish, in the same manner as the exotic *E. piscatoria*. So powerful are its qualities, that a small creel or basket, filled with the bruised plant, suffices to poison the fish for several miles down a river.

5. E. *palústris* L. (*Marsh S.*); "umbel irregular about 5-cleft then 3-fid and bifid, bracteas all elliptical glabrous entire, leaves broadly lanceolate minutely serrate slightly hairy, glands of the involucre 4 transversely oval, capsules warted hairy, seeds obovate minutely punctate smooth." *Bab.: Forst. in Linn. Trans.* xvii. p. 536. E. pilosa, *L.: E. B. S.* t. 2787.

Shady places. Prior Park Lane, near Bath; *Lobel* before 1576, and *Johnson* in 1624. ♄. 5, 6. — We follow Mr. Babington in the character of this and the following species, and Mr. E. Forster for the name here adopted. The species chiefly known under this name on the Continent has glabrous capsules, and is perhaps not sufficiently distinct from *E. Hiberna.*

6. E. **coralloídes* L. (*Coral-like hairy* S.); "umbel 5-fid then 3-fid and 2-fid, bracteas ovate-oblong the tertiary ones ovate, all hairy, leaves lanceolate minutely serrate woolly, glands of the involucre transversely oval, capsules nearly smooth woolly, seeds obovate minutely punctate and with faint reticulate bands." *Bab.: E. B. S.* t. 2837.

Slinfold, Sussex, in hedges; supposed to have been introduced. ♂? 5, 6. — "Distinguished from *E. palustris* most remarkably by its habit; and although its specific characters are less easily observed, yet, in my opinion, they are fully sufficient, permanent, and apparent, to separate it from its allies." *Bab.* in E. Bot. Both appear to be included under *E. pilosa* by M. Roeper, who alone has taken a clear and comprehensive view of the variations to which the European species of the genus are subject.

†† *Glands of the involucre triangular, or lunate on the outside, or 2-horned.*

‡ *Bracteas distinct at the base.*

7. E. **E'sula* L. (*leafy-branched* S.); umbel of many principal branches and several scattered peduncles below, bracteas cordate, leaves membranaceous linear- or oblong-lanceolate mostly entire, glands of the involucre roundish with two horns, germens glabrous minutely granulated, seeds obovate smooth. *E. B.* t. 1399.

Woods near Edinb. and at Slinfold, Sussex. Banks of Tweed near Coldstream. ♃. 7.

8. E. * *Cyparíssias* L. (*Cypress S.*); umbel of many principal branches and several scattered peduncles below, bracteas cordate, leaves linear entire membranaceous glabrous, glands of the involucre lunate, germens minutely granulated, seeds obovate smooth. *E. B.* t. 840.

Woods. Staffordshire, Bedfordshire, Northumberland. ♃. 6, 7. — Readily distinguished by its narrow linear *leaves.*

9. E. *Parálias* L. (*Sea S.*); umbel of about 5 principal bifid branches often with inferior scattered ones, bracteas somewhat reniform-cordate concave, leaves coriaceous obovate- and linear-lanceolate (generally) imbricated glaucous entire concave, glands of the involucre (5) lunate with short points, capsules wrinkled, seeds smooth. *E. B.* t. 195.

Sandy sea-coast of England, and near Dublin, but not general. 4. 8—11. — *Stems* numerous from the same root, woody below. *Leaves* very closely imbricated, especially on the young shoots.

10. E. *Portlándica* L. (*Portland* S.); umbel with about 5 principal dichotomous branches and several inferior scattered ones, bracteas triangular-cordate, leaves membranaceous obovate-lanceolate generally obtuse and submucronate, glands of the involucre (4) lunate with two long points, capsule rough at the angles, seeds dotted (almost white). *E. B.* t. 441.

Sandy sea-coast, in the extreme south and west of England; Wales; Isle of Man. South of Scotland. Dublin. 4. 5—9. — *Stem* 6—10 inches high. This appears to be very rare on the Continent, unless known under some other name.

11. E. *Péplus* L. (*petty S.*); umbel of about 3 principal branches, bracteas ovate, leaves membranaceous broadly obovate on short stalks entire glabrous, glands of the involucre lunate the horns very long, germen somewhat winged and scabrous, seeds dotted. *E. B.* t. 959.

Cultivated and waste-ground, abundant. ☉. 7—11.

12. E. *exígua* L. (*dwarf S.*); umbel of generally 3 principal forked branches, leaves linear-lanceolate as well as the bracteas rather rigid entire glabrous often truncate and mucronate, glands of the involucre roundish with two horns, capsules nearly smooth slightly tuberculate on the angles, seeds angular wrinkled or reticulated. *E. B.* t. 1336.

Corn-fields, in a light soil, frequent. ☉. 7—10. — *Stem* 4—6 inches high, branched at the base. *Seeds* small, white, nearly 4-angled.

13. E. * *Láthyris* L. (*Caper S.*); umbel of 3—4 principal bifid branches, bracteas cordate-acuminate, leaves submembranaceous entire 4-farious on the first year's stem, oblong-lanceolate and cordate at the base on the second year's shoot, glands of the involucre bluntly lunate, germen glabrous, seeds rough. *E. B.* t. 2255.

Thickets and underwoods. Ufton, near Reading; East Marden, Essex; Arundel, Sussex; Steep Holmes in the Severn. Crawfurdland, near Kilmarnock; Comrie Den, near Dunfermline; &c. ♂. 6, 7.

‡‡ *Bracteas united at the base, as if one perfoliate leaf.*

14. E. *amygdaloídes* L. (*Wood S.*); umbel of about 5 or 6 principal branches, and several scattered peduncles below, leaves nearly membranaceous obovate-lanceolate hairy beneath attenuate at the base entire, glands of the involucre (yellow) lunate with 2 horns, capsules minutely tuberculate glabrous, seeds smooth. *E. B.* t. 256. E. sylvatica *L.*

Woods and thickets in England, especially in a clayey soil. South of Ireland. ♃. 4, 5. — *Stems* red, almost shrubby.

15. E. * *Charácias* L. (*red shrubby S.*); umbel of many principal downy branches with several peduncles below, bracteas broad acute, leaves lanceolate, glands of the involucre (purple) bluntly lunate, germens minutely tuberculate glabrous, seeds smooth. *E. B.* t. 442.

In Needwood Forest, Staffordshire. ♄. 3, 4. — A large and handsome species, not uncommon in gardens, whence it has been an outcast.

3. Búxus *Linn.* Box.

Flowers monœcious, aggregated, axillary. — *Barren fl. Perianth* of 4 leaves (2 inner opposite ones smaller) with one *bractea* at the base. *Stam.* 4, inserted under the rudiment of an *ovary.*— *Fertile fl. Perianth* as in the *barren fl.*, with 3 *bracteas* at the base. *Styles* 3. *Ovary* 3-celled, 6-ovuled. *Caps.* with 3 beaks, 3-celled; cells 3-seeded. — Name altered from πυξος, the Greek name for this tree.

1. B. *sempervírens* L. (*common B.*); leaves oval oblong retuse convex coriaceous shining, their stalks slightly hairy, anthers ovate-sagittate. *E. B.* t. 1341.

Dry chalky hills, principally in the south of England. ♄. 4—6. — A small *tree* when suffered to attain its natural stature. A dwarf *var.* is extensively employed as edgings in gardens. The *wood* is of great value for turning, carving, and engraving upon.

Ord. LXXVIII. CALLITRICHACEÆ *Lindl.*

Flowers axillary, solitary, very minute, imperfect, monœcious, with 2 fistular white *bracteas* (sometimes wanting in the fertile fl.) at the base. *Perianth* 0.— *Barren fl. Stamen* 1 or rarely 2; *filament* filiform, furrowed along the middle; *anther* reniform, 1-celled, opening transversely by 2 valves at the summit. — *Fertile fl. Ovary* solitary, 4-angled, 4-celled, with a solitary *ovule* in each cell suspended from the axis a little above the

middle. *Styles* 2, subulate. *Stigmas* punctiform. *Fruit* 4-celled, 4-lobed; the lobes 1-seeded, indehiscent, laterally compressed, cohering at the axis, otherwise free. *Seeds* attached by the middle. *Embryo* in the axis of fleshy *albumen; radicle* superior, long; *cotyledons* short, semiterete. — *Small aquatic* herbaceous plants, *with opposite*, *simple*, *entire* leaves.

1. Callítriche *Linn.* Water Starwort.

Char. that of the Order. — Name: καλος, *beautiful* and θριξ, τριχος, *hair;* its stems being long and slender, and resembling hairs.

1. C. *vérna* L. (*vernal W.*); fructiferous peduncles very short with 2 falcate bracteas at their base, fruit regularly tetragonal, each lobe keeled or slightly winged at the back. — *α.* lobes of the fruit bluntly keeled. C. aquatica *E. B.* t. 722. — *β.* lobes of the fruit slightly winged at the back. C. platycarpa *Kutz.*: *E. B. S.* t. 2864.

Ditches, pools, and slow streams, abundant. ⊙. 4—9. — This varies much, as do almost all aquatic plants, in its foliage. Upper and floating *leaves* generally oval and stalked, 2-ribbed; lower ones single-ribbed, linear; rarely all linear. Our *var. α.* is said to have the *styles* constantly erect, *var β.* to have them reflexed when in fruit; but in the former we find them to be usually as much reflexed as in the other.

2. C. *pedunculáta* DC. (*pedunculated W.*); fructiferous peduncles without bracteas at the base, fruit regularly tetragonal, each lobe bluntly keeled at the back. C. autumnalis *Hook. in E. B. S.* t. 2606. (*excl. the syn.*).

Ditches in Jersey, Sussex, Shropshire, Wales, &c. ⊙. 6—9. — *Fruit* sometimes almost sessile.

3. C. *autumnális* L. (*autumnal W.*); fructiferous peduncles very short without bracteas at the base, fruit irregularly tetragonal, each lobe broadly and acutely winged at the back. *E. B. S.* t. 2732. C. aquatica *γ. E. B.* t. 722 (*the small figure*).

Ditches and lakes. Near London. Anglesea. Loch of Cluny, Perthshire; Lochs near Forfar; Loch of Drum, Kincardineshire; Scotland. ⊙. 6—10.

Ord. LXXIX. CERATOPHYLLACEÆ *Gray.*

Flowers imperfect, monœcious. *Perianth* (*involucre?*) single, free, 10—12-cleft. — *Barren fl. Anthers* 12—20, sessile, 2-celled, 2—3-cuspidate. — *Fertile fl. Ovary* superior, solitary,

bicuspidate above the base, 1-celled, with one pendulous *ovule*. *Style* oblique, filiform, at length hardened, persistent. *Stigma* simple. *Fruit* an *achene*, 1-seeded. *Albumen* 0. *Embryo* straight; with 2 *cotyledons* and a many-leaved *plumule; radicle* inferior. — *An* aquatic *Order comprising one genus of doubtful affinity*. Leaves *whorled, rigid, dichotomous, with narrow serrated segments*.

1. Ceratophýllum *Linn.* Hornwort.

Character same as of the Order. — Name: κερας, κερατος, a *horn*, and φυλλον, a *leaf*, from the forked leaves.

1. C. *demérsum* L. (*common H.*); fruit armed with 2 spines or tubercles near the base and terminated by the longish subulate style. — *α.* spines of the fruit rigid long terete. *E. B.* t. 947. C. oxyacanthum *Cham.* — *β.* * spines of the fruit long rigid laterally compressed and winged at the base. C. platycanthum *Cham.* — *γ.* * two tubercles at the base of the fruit and no spines. C. submersum *DC.* C. apiculatum *Cham.*

Frequent in slow streams and ditches. ♄. 7. — Floating. *Stem* long, slender. *Leaves* setaceous, whorled, 2 or 3 times forked, distantly serrate. *Flowers* small, whorled in the axils of the leaves. Spines of the *fruit* sometimes very obscure. The foliage of this plant is often inflated and jointed, so as to look like a *Conferva*. Smith remarks that he observed the segments of the perianth to be always emarginate or bifid in this species, and entire in *C. submersum;* but it would appear from Lindley's Veget. Kingd. p. 263. fig. 178., that no dependence can be placed on this. Our *var. α.* is the most common in this country; *β.* is the most common in Germany, and both it and *γ.* may have been passed over with us as the same as *α.* The *var. γ.* forms a link between this and the next.

2. C. *submérsum* L. (*unarmed H.*); fruit without spines or tubercles and terminated by the very short style. *E. B.* t. 679. C. muticum *Cham.*

Ditches in the east and south of England, rare. ♄. 6, 7. — Only to be distinguished from the preceding by the very short persistent style (much shorter than the fruit), and the total absence of either spines or tubercles.

Ord. LXXX. URTICACEÆ *Juss.*

Flowers generally monœcious or diœcious (very rarely some of them perfect), scattered, or amentaceous, or aggregated, on a fleshy persistent receptacle. *Perianth* divided, persistent or wanting. *Stamens* definite, distinct, opposite the lobes of the

perianth and inserted at its base when there is one. *Ovary* free, 1-celled. *Ovule* solitary. *Fruit* usually an *achene*, often several combined and immersed in the persistent fleshy perianths or upon or within large fleshy receptacles. *Embryo* with the *radicle* superior.—Trees, shrubs, *or* herbs, *with* stipules, *often stinging and sometimes milky.*—This has been divided into four Orders or Sub-orders. 1. URTICEÆ, containing the *Nettles*, &c., the fibre of the inner bark of some of which is very tenacious. II. CANNABINEÆ, yielding *Hemp* from the genus *Cannabis*, and a narcotic bitter from the same and also from the *Hop*. III. MOREÆ (known by the flowers in heads, spikes, or catkins, stamens incurved during æstivation, hooked embryo and fleshy albumen); to which belong *Morus alba*, producing the *Mulberry; M. tinctoria*, the dye called *Fustic; Broussonetia* or the *Paper Mulberry*. IV. ARTOCARPEÆ (having the flowers in dense heads, spikes, or catkins, stamens straight during æstivation, a very short radicle, milky juice, and almost always alternate leaves), to which are referred the famous *Bread-fruit* or *Artocarpus incisa*, and the *Jak-* (or *Jack-*) *fruit*, *A. integrifolia; Antiaris toxicaria*, the celebrated *Poison-tree*, or *Upas*, of Java; and the *Galactodendron utile* Humb., or Cow-tree, of South America, from which flows a milk which is esteemed a most nutritive beverage by the natives: also *Ficus Carica*, yielding the luscious *Fig; Urostigma elasticum*, one of the plants that produce *Caoutchouc* or *India-rubber; Dorstenia*, a species of which is the *Contrayerva*.

1. URTICA. Stamens 4. Perianth of fertile flowers 2-sepaled. Stigma 1, sessile, penicillate.
2. PARIETARIA. Stamens 4. Perianth of fertile flowers 4-cleft. Style 1, conspicuous. Stigma 1, penicillate.
3. HUMULUS. Stam. 5. Perianth of fertile flowers a mere scale. Stigmas 2, sessile, filiform.

SUB-ORD. I. URTICEÆ. *Flowers usually separate from each other. Filaments curved inwards during æstivation, then bending outwards. Anthers inverted in æstivation. Style and stigma* 1. *Ovule erect. Embryo straight, in the axis of fleshy (but often thin) albumen. Stipules small.*

1. URTÍCA *Linn.* Nettle.

Monœcious or diœcious. — *Barren fl. Perianth* of 4 leaves, containing the rudiment of a *pistil*. *Stam.* 4. — *Fertile fl. Perianth* of 2 leaves, with sometimes 2 external smaller ones or bracteas. *Stigma* 1, sessile, penicillate. *Fruit* an *achene*.—

Leaves *opposite*. — Named from *uro*, to *burn*; in allusion to its stinging property.

1. U. *pilulífera* L. (*Roman N.*); leaves ovate or cordate acuminate with transverse nerves, spikes in pairs, fertile ones dense globular, achenes minutely granulate shining, root annual. — *α*. leaves usually coarsely toothed. *E. B.* t. 148. — *β*. leaves nearly entire. U. Dodartii *L.* U. integrifolia *Lam.*

Under walls and among rubbish, about towns and villages in England, principally near the sea, but nowhere well established. Ballylickey, south of Ireland. — *β*. Copford, Essex: Upwell, Norfolk; Wisbeach, Cambridgeshire. ☉. 6—8. — The most venomous of our British *nettles*. *U. Dodartii* is only known as a cultivated plant, and therefore may be looked upon as a very suspicious native, although the above localities have been given for it.

2. U. *úrens* L. (*small N.*); leaves elliptical serrate with about 5 nearly parallel ribs, spikes in pairs oblong nearly simple shorter than the petiole, achenes obscurely granulate opaque, root annual. *E. B.* t. 1236.

Waste places and cultivated ground, frequent. ☉. 6—9.

3. U. *dioíca* L. (*great N.*); leaves ovate acuminate or ovate lanceolate serrate cordate or rounded at the base, spikes in pairs mostly diœcious much branched longer than the petiole, root perennial. *E. B.* t. 1750.

Waste places under walls and hedge-banks, frequent. ♃. 6—9. — When the leaves are broad they are cordate, when narrow, rounded at the base; but transitions may be observed on the same specimen. *Filaments* transversely wrinkled and elastic as in *Parietaria*. *Fertile perianth* often with two small *bracteas* at the base. The *root*, boiled with alum, dyes yarn yellow; from the fibres of the stalk a kind of hemp is manufactured, as with the *U. cannabina* of N. America. In Scotland the young tops are in spring boiled and made into soup or *kail* by the common people, which is viewed in the light of a cooling medicine.

2. Parietária *Linn.* Pellitory of the Wall.

Polygamous. *Perianth* 4-fid. *Stam.* 4, wanting in some flowers; *filaments* transversely wrinkled, at first incurved, then bending back with elastic force. *Style* filiform. *Stigma* penicillate. *Achene* shining, enclosed by the *perianth*. — Leaves *alternate*. — Named from *paries*, a *wall*; the species frequently growing on old walls.

1. P. *officinális* L. (*common P.*); leaves oblong-ovate or ovate-lanceolate attenuated at both ends 3-nerved above the base, involucre of two 3—7-lobed segments with an alternating

bractea 3—7-flowered, flowers sessile, that between the segments with a pistil only, one only on each segment perfect at length enlarged tubular coloured and longer than the stamens, the others (when present) barren always short and campanulate. — *α.* involucres mostly 3-flowered, stems ascending or diffuse. *E. B.* t. 879. P. ramiflora *Mœnch.* P. diffusa *Koch.* — *β.* involucres mostly 7-flowered, stem usually erect. P. officinalis *Spr.* P. erecta *Koch.*

Old walls and waste places among rubbish.—*β.* more rare. Essex and Pembroke. North Wales. Stirling and Linlithgow. ♃. 6—9.—*Stems* reddish, pubescent. *Flowers* hairy, clustered in the axils of the leaves. The structure of these clusters, as explained by other species, appears to be this; every cluster is a minute contracted dichotomous cyme with a definite or centrifugal inflorescence: the central (primary) flower, which has no stamens, is provided with two lateral bracteas; between which and the flower appears a perfect (secondary) flower, having also two bracteas at its base, which uniting with the first bracteas form each of the three-lobed segments of the involucre: in luxuriant specimens every secondary flower is accompanied by two sterile (tertiary) flowers with an imperfect pistillum, furnished also with two bracteas, which also uniting with the preceding bracteas form two segments, of 7 lobes a-piece. The involucre then consists of twice as many bracteas as there are flowers, these bracteas being united into two pieces or leaves, consisting of as many lobes as there are flowers. Alternating with the pieces of the involucre is an additional smaller external bractea on one and sometimes on both sides. Occasionally in *var. α.*, especially near the summit of the stem, the secondary flowers are sterile: in *β.* this also occurs, the tertiary flowers disappearing; more rarely the secondary flowers disappear, leaving only the primary and four tertiary ones, and then every piece of the involucre is 5-lobed. What Linnæus called *P. Judaica*, from Palestine, may be a state (perhaps a monstrosity) of our *var. α.*, with the perfect flowers longer and narrower, somewnat resembling a horn; but what is so termed in Switzerland (Hall, n. 1613) is precisely our common form.

Sub-Ord. II. CANNABINEÆ. *Diœcious. Barren fl. racemose or panicled. Filaments of stamens straight and anthers erect during æstivation. Stigmas* 2, *sessile, filiform. Ovule pendulous. Embryo hooked or spiral, with a long radicle, without albumen. Stipules small. Juice watery.*

3. Húmulus *Linn.* Hop.

Barren fl. Perianth 5-partite. *Stam.* 5. *Anthers* with 2 pores at the extremity. — *Fertile fl.* in a catkin, the *scales* (*perianth?*) concave, entire, single-flowered, at first enveloping the *ovary*, at length persistent and enlarged. *Perianth* 0, ex-

cept the scale. *Embryo* spiral. — Name: *humus, rich soil, mould;* in which the plant flourishes.

1. H. **Lupulus* L. (*common H.*). *E. B.* t. 427.

Thickets and hedges in various places. ♃. 7, 8. — *Stems* lon weak and twining, scabrous. *Leaves* petiolate, opposite 3—5-lob serrate, veiny, rough. *Flowers* greenish-yellow. Dr. Bromfield thoug this "indisputably indigenous in the S. of England." The fragra bitter, so valuable in the manufacture of beer, resides in the *catkin* or *cones*, as they are often called, of the *Hop*.

Ord. LXXXI. ULMACEÆ *Mirb.*

Flowers perfect or polygamous, not in catkins. *Perian* membranous, inferior, campanulate, and 3—8-cleft, or 5-partit segments imbricated in æstivation. *Stamens* definite, inserte into the base of the perianth, as many as and opposite to i segments. *Anthers* 2-celled, erect in æstivation. *Ovary* fre 1—2-celled. *Ovules* solitary in each cell, pendulous or su pended. *Stigmas* 2, distinct, elongated. *Fruit* 1-celled, seeded, indehiscent, dry, or drupaceous. *Seed* pendulous, with out or with little (fleshy) *albumen*. — Trees *or* shrubs, *wi scabrous, alternate, distichous, stipuled leaves; allied to* Rham naceæ, *according to Lindley; but if* Celtideæ *be combined wi them, they are scarcely distinguishable from* Urticaceæ, *of whic they are probably only a Suborder.*

1. U'lmus *Linn.* Elm.

Flowers perfect. *Perianth* persistent, with 3—8 division campanulate or conical at the base. *Stam.* 5. *Filaments* straigl in æstivation, not bending back elastically. *Ovary* 2-celle *Capsule* compressed, winged all round (hence a *Samara*). — Named, according to Théis, from the Anglo-Saxon *Elm;* an *Olm* is still the Dutch, and *Ulm* the German word for this tree but all these are derived from the Hebrew *ul*, to be *strong*, *vigorous*, from the growth of the tree and quality of the timbe

(The English species belong to the subgenus *Dryoptelea* Spach *Pericarp* subcyathiform-campanulate, equal, 4—6 cleft. *Samara* nake at the margin. *Pedicels* short, densely fascicled. *Leaves* serrat *Flowers* before the leaves. — As in *Rubus* and *Salix*, the numerou supposed species of this genus require to be much reduced; we sha follow Planchon in the Ann. Sc. Nat. Ser. 3. x. p. 272. and Phyto iii. p. 34.)

1. U. **suberósa* Ehrh. (*common E.*); leaves shortly acuminat doubly or somewhat simply serrate, flowers (small) 4—5-cleft segments ciliated, samara broadest above the middle glabrou

shortly bifid at the apex, the seminiferous cavity chiefly above the middle, and extending almost to the notch. — *α. vulgaris;* leaves rhomboid-obovate small (1—3 inches long) scabrous above pubescent below. U. campestris *Sm.* (and *most authors*, not *L.*) *E. B.* t. 1886 (*samara cuneate-oblong*). U. suberosa *Ehrh.: E. B.* t. 2161 (*samara roundish-obovate*). — *β. major;* leaves larger (2½—5 inches long) scabrous above, pubescent below. U. major *Sm.: E. B.* t. 2542 ? — *γ. lævis;* leaves more or less coriaceous shining and smooth or slightly scabrous above, nearly glabrous beneath except in the axils of the nerves, younger ones stipules and samara with scattered staiked glands, branches pendulous. U. glabra *Mill.: E. B.* t. 2248. U. carpinifolia *Lindl.* — *δ. fastigiata;* as in the last, but the branches rigid erect and compact, and the leaves sometimes cuspidate. U. stricta *Lindl.*

Woods and hedges. — *α.* Throughout England. — *β.* in the neighbourhood of London. — *γ,* Chiefly in the S. of England and Ireland. — *δ.* Cornwall and North Devon. ♄. 3—5. — The first form of our *var. α.* which grows principally in Norfolk and Sussex, yields the best wood of all the Elms, and is consequently employed for a great variety of purposes, particularly for articles that must be exposed to moisture. It is said to have been brought to Europe from Palestine by the Crusaders. The other form, although the common Elm of England, was not believed to be indigenous so long ago as in the time of Miller. Perhaps two plants are known under the name of *U. major:* all those we have seen belong to the present species; but Smith's description of the fruit is more that of the next, while the figure in E. Bot. seems to be that of *U. suberosa:* it is generally considered not to be a native, as the old name *U. Hollandica* imports. The var. *γ.* is the *Wych* or *Witch-Elm*, and appears to be only a glabrous form of this species: some specimens called *U. glabra* belong however to the next. Of *U. stricta* of Lindley the fruit is unknown.

2. U. *campestris* L. (*broad leaved E. or Wych-hasel*); leaves doubly serrate cuspidate, usually scabrous above and pubescent beneath sometimes nearly glabrous, flowers 5—7-cleft, segments ciliated, samara oblong or roundish broadish about or below the middle shortly bifid at the apex, the seminiferous cavity chiefly below the middle and distant from the notch. U. montana *Bauh.: Sm.: E. B.* t. 1887.

Woods and hedges frequent, certainly wild. ♄. 3, 4. — This is certainly the *U. campestris* L. and of Swedish and Danish botanists, as Mr. Borrer long since suspected, and which Dr. Bromfield has proved by consulting the Linnæan herbarium: it is the only species wild in the north of Europe. Distinguished at first sight by its large spreading *branches* and broad *leaves* appearing just as the "hop-like *fruit*" comes to perfection, but with more certainty, by the relative position of the cavity and notch of the *fruit*, a character first indicated by Gaudin, and which may even be observed in the *ovary*

when a little advanced. A variety is called the *weeping Elm.* To t
Lindley refers also the *Giant Elm* and *Chichester Elm.* The wood
of inferior quality. The late Dr. Bromfield refers here rather th
to *U. suberosa* the *U. glabra* of Botanists, and says that *U. suberosa*
marked by a disposition to emit suckers from the root, the se
rarely coming to perfection; while in *U. montana* the bark is smooth
there are few or no suckers, and the fruit ripens perfectly.

** *Barren flowers in catkins.* (Ord. LXXXII.—LXXXVI

Ord. LXXXII. ELÆAGNACEÆ *Juss.*

Mostly diœcious. — *Barren fl.* somewhat amentaceous. *P*
rianth 2—4 parted. *Stamens* 3 or more. *Anthers* 2-celle
— *Fertile fl. Perianth* tubular persistent, 2—4-toothed
cleft. *Ovary* 1, free, 1-celled, with one erect *ovule. Sty*
short. *Stigma* subulate, glandular. *Fruit* crustaceous, enclos
within the fleshy perianth. *Seed* solitary, erect. *Embryo* wi
a thin fleshy *albumen; radicle* inferior. — Trees *or* shrubs, *w*
frequently leprous scales and no stipules.

1. Hippóphae *Linn.* Sallow-thorn.

Diœcious. — *Barren fl.* collected into a small sort of *catk*
each *scale* bearing a flower. *Perianth* single of 2 deep, roun
ish valves. *Anthers* linear, nearly sessile. — *Fertile fl.* solitar
Perianth single tubular, cloven at the summit. — Name:
Greek ἱπποφαη, apparently a corruption of ὑποφαη, from ὑπ
under, and φαω, *to shine*, in reference to the shining scales
the under-sides of the leaves.

1. H. *rhamnoides* L. (*common S.* or *Sea-Buckthorn*). *E.*
t. 425.

Sand-hills and cliffs, upon the east and south-east coast of Englan
Kent; Essex; Norfolk; Lincoln; and Yorkshire. Aberlady on t
Forth, and Toward-point on the Clyde; also in Islay and Kinty
but scarcely indigenous in Scotland. ♄. 5—7.

Ord. LXXXIII. MYRICACEÆ *Rich.*

Monœcious or diœcious, all amentaceous. *Perianth* 0.-
Barren fl. Stamens 2—8. *Anthers* 2- or 4-celled, openi
longitudinally. — *Fertile fl. Ovary* free, 1-celled, with 1 ere
ovule, surrounded by hypogynous persistent scales. *Stigmas*
Fruit drupaceous, often covered with waxy secretion, and wi
the hypogynous scales becoming fleshy and adherent. *See*

solitary, erect. *Embryo* without albumen. *Radicle* short, superior. — Shrubs, *or small* trees, *often aromatic, with resinous glands and alternate* leaves. In *Myrica cerifera*, a copious wax exudes from the berries, employed for economical purposes.

1. Myrica *Linn.* Gale.

Scales of the *catkins* concave. — *Barren fl. Stam.* 4 or 8. — *Fertile fl. Stigmas* subulate. Hypogynous *scales* sessile, without a gland on the inside. — Name: μυρικη, in Greek synonymous with the *Tamarix*.

1. M. *Gále* L. (*sweet G.* or *Dutch-Myrtle*); leaves lanceolate broader upwards serrate, stem shrubby. *E. B.* t. 562.

Bogs and moory ground, most abundant, especially in Scotland. ♃. 5—7. — The plant diffuses an agreeable smell: its *leaves* have a bitter taste, whence they are sometimes employed instead of hops. In Islay and Jura the inhabitants scent their clothes with the foliage; and, in many parts of Scotland, beds are made of the twigs.

Ord. LXXXIV. BETULACEÆ *Rich.*

Monœcious, all amentaceous. — *Barren fl. Scales* of the *catkin* peltate, 1—3-flowered, with 2—5-bracteoles. *Perianth* 4-partite or none. *Stam.* 4 and opposite the leaves of the perianth, or 8—12 with 2—3 scales at their base. *Filaments* very short, distinct. *Anthers* erect, 2- (or 1-?) celled. — *Fertile fl. Scales* of the *catkin* entire or 3-lobed, 2—3-flowered, enlarging with the fruit. *Perianth* none, or of 4 scales at the base of the ovary. *Ovary* free, 2-celled with a solitary pendulous *ovule* in each cell. *Style* 0. *Stigmas* 2, filiform. *Fruit* compressed, dry and indehiscent, 1-celled, 1-seeded. *Seed* pendulous; *albumen* 0; *cotyledons* flat; *radicle* superior. — Trees *or* shrubs. Leaves *alternate, simple, with the nerves often running straight from the midrib to the margin.* Stipules *deciduous.*

1. Betula. Perianth of barren fl. 0. Stam. 8—12. Achene winged.
2. Alnus. Perianth of barren fl. 4-partite. Stam. 4. Achene not winged.

1. Bétula *Linn.* Birch.

Barren fl. Perianth 0. *Stam.* 8—12, with 2—3 small scales at the base (indicating 2—3 flowers each of 4 stamens.) — *Fertile fl. Scale* of the *catkin* 3-lobed, 3-flowered. *Perianth* 0. *Fruit* with a membranaceous margin. — Name: derived from *betu*, the Celtic name for the Birch (*beath* in Gaelic).

1. B. *álba* L. (*common B.*); leaves ovate-deltoid acute doubly serrate, scales of the fertile catkins 3-lobed, fruit broadly obovate with a broad margin. *E. B.* t. 2198. — *α.* lateral lobes of scales decurved. B. verrucosa *Fries.* — *β.* lateral lobes ascending. B. glutinosa *Fries.*

Woods, especially in heathy soils and in mountainous countries. ♄. 4, 5. — There is a *var.* of this tree (*B. pendula* Roth, *Lindl. Syn.* p. 229.), with remarkably drooping branches, which are more verrucose than in the common appearance: it is not unfrequent in the Highlands of Scotland, and generally known by the name of the *drooping* or *weeping birch.* There is also another with the young shoots and peduncles downy, which seems to be *B. pubescens* Ehrh. The lateral lobes of the catkin-scales vary, being either erect or spreading, or even decurved, particularly in the *drooping Birch;* and although we have admitted the two extremes to mark our varieties, we cannot admit such to be of specific importance. The wood is tough and white, and employed for various purposes. Much is burnt into charcoal. Brooms are made of it, and well-known instruments of castigation. Of the bark, in some countries, hats and drinking-cups are formed; and, what is more important, the oil obtained from the *degot*, or "*white rind*," is used in tanning the well-known *Russia leather.* It is, moreover, employed by the people of the same country as a vermifuge, and a balsam in the cure of wounds.

2. B. *nána* L. (*dwarf B.*); leaves orbicular obtusely crenate glabrous, catkin scales trifid, fruit orbicular with a narrow margin. *E. B.* t. 2326.

In several parts of the Highlands of Scotland. Rare in the Lowlands. ♄. 5. — A small shrubby plant not exceeding 1—2 feet in height. *Leaves* on short footstalks. *Fertile catkins* at the extremity of the branches, small; their scales cleft to the middle or sometimes to near the base, variable in the same specimen. — Even this humble shrub the poor Laplander turns to use. It is almost all he meets with in certain situations, that can be converted into fuel for cooking food and driving away the gnats; and the dry foliage covered with rein-deer's skin, serves him for a bed.

2. A'LNUS *Tourn.* Alder.

Barren fl. Scale of the *catkin* 3-lobed, with 3 *flowers. Perianth* 4-partite. *Stam.* 4. — *Fertile fl. Scale* of the *catkin* subtrifid, with 2 *flowers. Perianth* 0. *Ovary* with 4 minute scales at its base. *Fruit* without a membranaceous margin, compressed. — Name: derived by Théis from the Celtic, *al*, *near*, and *lan*, a *river*, but more probably from the Hebrew *Aelon*, a *vigorous* tree, and usually applied to the Oak.

1. A. *glutinósa* Gærtn. (*common A.*); leaves roundish-cuneiform obtuse lobed at the margin and serrate somewhat glutinous downy in the axils of the nerves beneath. Betula Alnus *L.: E. B.* t. 1508.

Wet meadows and moist grounds by water, frequent. ♄. 3—4. — A well-known *tree*, whose *wood* is employed for various purposes and is particularly valuable for the piles of bridges, as it remains undecayed under water for a considerable length of time; thus the celebrated and ancient bridge called the Rialto, at Venice, is built on Alder piles, and so are many large edifices at Amsterdam. The *bark* and *leaves* are employed in dyeing and tanning leather; the former for staining *sabots* or wooden shoes (which are also made of the tree) and fishermen's nets, its astringent quality strongly recommending it for the latter purpose. *Sterile catkins* long, large, and cylindrical, pendent, their *footstalks* branched. *Fertile catkins* small, ovate, with deep-red scales.

Ord. LXXXV. SALICACEÆ *Rich.*

Flowers diœcious, all amentaceous. — *Barren fl. Perianth* 0 (replaced by 1—2 nectariferous gland), or oblique and entire. *Stamens* 2—30: *anthers* 2-celled. *Fertile fl. Perianth* 0 or turbinate. *Ovary* free, 1-celled, with numerous erect *ovules* attached to the bottom of the cell or to the base of 2 parietal placentas. *Style* 1 or 0. *Stigmas* 2, entire or cleft. *Fruit* leathery, 1-celled (or by the inflexion of the edges of the valves somewhat 2-celled), 2-valved, many seeded. *Seeds* erect, minute, covered with long silky hairs springing from their base. *Albumen* 0. *Embryo* erect; *radicle* inferior. — Trees *or* shrubs. Leaves *alternate, simple, with often glands on their edge or on the petiole.* Stipules *deciduous or persistent, sometimes none.*

1. Salix. Scales of the catkins entire, with 1—2 nectariferous scales, and no perianth. Stam. 1—5.
2. Populus. Scales of the catkins usually jagged, without nectariferous glands. Perianth cup-shaped containing the stam. and pist. Stamens 4—30.

1 Sálix *Linn.* Willow. Sallow. Osier.

Scales of the *catkins* quite entire. *Perianth* 0, except 1—2 unilateral nectariferous *glands* between the stamens or pistil and the rachis. — *Barren fl. Stam.* 1 (of 2 combined) or 2—5 — *Fertile fl. Stigmas* 2, entire or cloven into two. *Caps.* 1-celled. — Named, according to Théis, from *sal*, *near*, and *lis*, *water*, in Celtic; but the Welsh and Celtic name of the tree is *helig*, the Cornish one *helak*, and the Gaelic and Irish *seileach*, from any of which *Salix* is rather derivable.

The many important uses rendered by the different species of *Willow* and *Osier*, serve to rank them among the first in our list of economical plants. The larger kinds, which are, too, of the most rapid growth, yield timber and exceed 60 feet in height; whilst the least of them, which grows on the summits of our Highland moun-

tains (*S. herbacea*), can scarcely be said to rise above the surface of the soil in which it vegetates. Many are in great request for baskets, hoops, and crates: their bark is used by the tanner, and that of one species (*S. fragilis* var. *Russelliana*) as a substitute for the true Peruvian Bark. A correct knowledge of them, then, is of primary importance; yet there is not in the whole range of the vegetable creation, a genus liable to more variation in properties, as well as in foliage and general appearance, at different periods of growth, in different soils and situations, and under different circumstances; so that the accurate determination of its species, or even what constitutes a species, has baffled the researches of the ablest botanists. The figures in *Eng. Bot.* are rather portraits of individuals, perpetuated by cuttings, than general representations of the species, which would have been better illustrated and understood had the specimens been raised from seed, or selected from truly wild plants. Of some it is said that we only know the barren plant; of others only the fertile; either such cannot be indigenous, or the one kind may have put on so different an aspect as to be looked for among the allied supposed "distinct species:" according to our own observations the fertile plant is subject to more variation in the form of the leaves than the barren one, but both often vary extremely, rendering that character generally of no value even for distinguishing varieties. In an overloaded and confused diœcious genus like the present, we can only positively determine which is the sterile and what the fertile state of the *same* species, by raising them from seed: were this accomplished, we might reasonably expect, whenever the species was a good one, a double set of characters, each sufficient of itself; instead of having, as at present, only one, and that far from precise, taken partly from the pistillate, partly from the doubtful staminate plant. — We shall continue to adopt, with few deviations, the arrangement proposed by Mr. Borrer in the 5th and previous editions of the *British Flora*, and refer our readers there for full notes on all the species or varieties. But it is to be regretted that some general arrangement, not for a local flora only, but for the species of the whole world, were not devised and universally adopted; perhaps none hitherto attempted is superior to that of Koch, with some slight modifications.

i. *Filament* 1, *with a* 4-*celled anther, or forked upwards and bearing two* 2-*celled anthers. Capsules sessile, very pubescent. Catkins appearing before the leaves, lateral, sessile, with* 2—3 *small leaf-like bracteas at the base; scales dark or purple at the end. Leaves linear or lanceolate, green or glaucous* (*not white and silky*) *beneath. Branches twiggy.* Monandræ *Borr.*

1. S. *purpúrea* L. (*purple W.*); filament 1, capsule ovate, style very short or none, stigmas ovate entire or emarginate, leaves often opposite broader upwards acuminate serrulate, stipules none. — *α.* decumbent, branches purple. *E. B.* t. 1388 (bitter purple W.). — *β.* erect, young branches purplish or yellow. S. Lambertiana *Sm.: E. B.* t. 1359 (Boyton W., *leaves lanceolate.*) S. Woollgariana *Borr.: E. B. S.* t. 2651. (Woollgar's W., *leaves cuneate-lanceolate*).

Marshes and banks of rivers. ♄. 3—5. — *Anthers* in this and *S. Helix* purple, becoming at length black.

2. S. *Hélix* L. (*Rose W.*); filament 1, capsule ovate, style conspicuous, stigmas bifid the segments nearly linear, leaves often opposite lanceolate broadest upwards acuminate serrulate, stipules none. *E. B.* t. 1343.

Marshes and the banks of rivers. ♄. 3, 4. — Mr. Leefe conjoins this with the last: and it only differs by the much longer *style*, and at length cloven *stigmas*: these last are sometimes entire when young, in which case they are ovate, as in *S. purpurea*. *Branches* erect: their *bark* glossy and yellow.

3. S. *Forbyána* Sm. (*fine Basket O.*); "monandrous, erect, leaves with small downy stipules lanceolate-oblong serrate glabrous, style equal in length to the linear divided stigmas." *Borr.*: *E. B.* t. 1344.

Meadow and osier-grounds at Fincham, Norfolk, and near Lynn, Cambridgeshire. ♄. 4. — "Stems yellowish-green, glossy. Allied to *S. Helix*, especially in the fructification, but differing in foliage. This species is much esteemed by basket-makers, for the finer sorts of wicker-work." All the flowering fertile specimens we have received or seen cultivated under this name have, however, the *stigmas* linear and entire, and do not differ from the next, with which Mr. Leefe conjoins it on account of its having *stipules* and constantly alternate *leaves*. The true sterile plant is as yet unknown; but Smith, judging from specimens in which some of the styles were converted into stamens, has described the *latter* as having a simple filament: we do not know the colour of the *anthers*.

4. S. *rúbra* Huds. (*green-leaved, O.*); filaments 2, united at the base, capsule oblong-ovate, style elongated, stigmas linear undivided, leaves alternate linear-lanceolate (broader in the fertile plant) acuminate serrate, stipules minute. *E. B.* t. 1145.

Low meadows and osier-holts, rare. Maidenhead; Windsor; near Salisbury; Cambridgeshire; Carlisle. Frequent in hedges and osier-grounds, Scotland. ♄. 4, 5. — A small *tree*, with longer and more lanceolate and acuminate *leaves* than any other in the present group, in the latter particular approaching, as Sir J. E. Smith remarks, *S. viminalis*, but wanting its dense white pubescence. The *stamens* are always more or less combined, below only, into one filament, as in *S. Croweana*, which in other respects is quite a different plant: *anthers* yellow, becoming brown, but scarcely ever black, by drying.

ii. *Stamens* 3. *Ovary stalked, usually glabrous. Catkins leafy, lax; their scales persistent of the same pale colour throughout*: "*nectary double.*" Leefe. *Leaves between lanceolate and ovate, glabrous, serrate. Stipules shorter than the petiole. Trees or large shrubs, casting their bark in autumn.* Triandræ *Borr.*

5. S. *triándra* L. (*blunt-stipuled triandrous W.*); leaves ser-

rate, stipules half-cordate approaching to reniform blunt, scales of the catkins glabrous or slightly hairy, capsule glabrous, stigmas nearly sessile. — *α.* leaves oblong-lanceolate, young branches not furrowed. *E. B.* t. 1435 (long-leaved tr. W.).— *β.* leaves linear-lanceolate green on both sides, young branches furrowed, capsule acuminate. S. contorta *Crowe.*—*γ.* leaves ovate lanceolate acuminate, young branches not furrowed. S. Hoffmanniana *Sm.: E. B. S.* t. 2620 (short-leaved tr. W.).—*δ.* leaves ovate or ovate-oblong glaucous beneath, young branches strongly furrowed. S. amygdalina *L.: E. B.* t. 1936 (Almond-leaved W.).

Banks of rivers and ditches and osier-grounds. ♄. 4—6. — The *stipules*, being modified leaves, vary in shape in the same species according to the form of the *leaves* themselves; but all the above have stipules of a very different form from the next species, to which however they approach in other respects. *Stigmas* varying from entire to bifid.

6. S. * *undulàta* Ehrh. (*sharp-stipuled triandrous W.*); leaves lanceolate much acuminate sharply and finely serrate often wavy, stipules half-cordate acute, scales of the catkins very villous, capsule glabrous (or silky) constricted above the middle, style as long as the bifid or emarginate stigmas. S. lanceolata *Sm.: E. B.* t. 1436.

Near Lewes, Sussex (the fertile plant, scarcely a native.) ♄. 4, 5. — A small *tree*, which casts its *bark* annually. It is cultivated and cut down every year for the use of basket-makers; but Mr. Forbes observes that it is not so well calculated for the finer sorts of wicker-work as *S. triandra.* Dr. Meyer of Göttingen has sent us specimens of the *S. undulata* of Ehrh., compared with the Ehrhartian herbarium; and Mr. Borrer is satisfied that they are identical with Smith's *lanceolata;* at least with the Sussex specimens communicated by Mr. Woollgar to him, and which are probably the same as the fertile individuals figured in *E. Bot.* Indeed that station is the only one mentioned by Sir J. E. Smith as English. Mr. Borrer has received German specimens of *S. undulata* with silky germens, and they are probably the *S. undulata* of the *Salictum Woburnense*, which differs only in that respect, and in its more wavy leaves, from our present plant.

iii. *Stamens more than 2, usually 5, distinct. Capsules ovate-lanceolate, stalked, glabrous. Catkins rather lax, appearing with the leaves on short lateral leafy stalks; the scales deciduous before the maturity of the fruit, of the same pale colour throughout:* "*nectary double,*" Leefe. *Leaves between lanceolate and ovate, glabrous, glossy, and fragrant, exuding a resin from their glandular serratures. Petioles glandular, especially towards the top. Stipules very deciduous. Trees or large shrubs.* Pentandræ *Borr.*

7. S. *pentándra* L. (*sweet Bay-leaved W.*); leaves elliptical-lanceolate acuminate, stamens 5 or more, style short, stigmas

bifid, stalk of the ovary not exceeding twice the length of the gland. *E. B.* t. 1805. S. Meyeriana *Borr.* in *Hook. Brit. Fl.* ed. 3. (not *Willd.?*).

Banks of rivers and watery places; most frequent in the north. ♄. 5, 6. — In its wild state it is a bushy shrub, rarely above 6—8 feet high; but when cultivated and protected from injury, it becomes a tree 18—20 feet high. Its large and copious shining foliage almost gives this plant the appearance of an evergreen. *Sterile catkins* fragrant, as well as the *leaves*. In the wild plant the *leaves*, at the time of flowering, rarely exceed $\frac{3}{4}$ of an inch in breadth, while they vary in length in specimens from the same marsh, from scarcely $2\frac{1}{2}$, when they are almost elliptical or ovate, to 3 inches, when they are oblong- or elliptical-lanceolate and much acuminated: in the cultivated tree they are usually much broader and larger; the sterile catkins too are much larger and more handsome than in the wild one: the stipules are said to be ovate-oblong, straight and equal-sided; but if we are not confusing specimens of the next, they are sometimes oblique and half-cordate, sometimes reniform on the autumnal shoots.

8. S. **cuspidáta* Schultz (*cuspidate W.*); leaves oblong-lanceolate much acuminate, "stipules half-cordate oblique, stamens 3—4," style short, stigmas bifid, stalk of the ovary 3—4 times as long as the gland. S. Meyeriana *Willd.*

Near Shrewsbury; *Leighton*, ♄. 6. — Of this we have not seen perfect specimens: the foliage is scarcely different from what we have seen in the last; but there would seem to be a difference in the length of the stalk of the ovary, if this be constant.

iv. *Stamens 2, distinct. Capsules sessile, ovate-conical glabrous. Style elongated bifid, stigmas oblong or linear-oblong. Catkins lateral, sessile, minutely bracteated, appearing before the leaves. Leaves lanceolate acute, adult ones glabrous. Branches with a glaucous bloom, especially when dried.* Pruinosæ.

9. **S. acútifolia* Willd. (*violet W.*) young shoots glabrous, leaves linear-lanceolate elongate acuminate serrulate glabrous somewhat glaucous underneath, stipules lanceolate acuminate.

Cleveland, and Wensley Dale, Yorkshire. ♄. The sterile plant has alone been met with in this country; and this is a sufficient argument against its being a truly native species. We believe it is commonly cultivated for its beautifully coloured branches. It is certainly the *S. violacea* of the *Sal. Wob.*

v. *Stamens 2, distinct. Capsules elongated, glabrous. Catkins very lax, appearing with the leaves on short lateral leafy shoots; their scales deciduous. Leaves lanceolate, serrate, with stipules. Petioles scarcely glandular.* Fragiles *and* Albæ *Borr.*

10. S. *frágilis* L. (*crack- W.*); leaves glabrous or downy beneath when young, stipules half-cordate, capsules more or less stalked, style conspicuous, stigmas bifid.—*a.* leaves ovate lanceolate (glabrous or downy beneath), floral ones similar, ovary

oblong-ovate scarcely longer than the scales, style shorter than the stigmas. *E. B.* t. 1807.—β. leaves lanceolate tapering at both ends (downy beneath when young), floral ones similar, ovary lanceolate-acuminate nearly twice as long as the scale, style the length of the stigmas. S. Russelliana *Sm.: E. B.* t. 1808 (Bedford W.).—γ. leaves lanceolate (quite glabrous), floral ones often obovate bluntish and recurved, "ovary tapering, style longer than the stigmas." S. decipiens *Hoffm.: E. B.* t. 1937 (white Welsh *or* varnished W.).

Marshy woods and osier-grounds, in many places. ħ. 4, 5. — Young branches brittle, especially in the *var.* α.; but in β. they are in some situations equally so. *Var.* β. is an extremely valuable tree, and was first brought into notice by his Grace the late Duke of Bedford. Of the size to which it reaches, some interesting details are given in the introduction to the *Salictum Woburnense.* It was a tree of this species, the favourite of Dr. Johnson at Lichfield, which was very recently destroyed by a hurricane, after it had attained a height of 60 feet, and a girth of 13 feet. Another, at Gordon Castle, Scotland, at the age of 61, was 57 feet high, and above 11 feet in its greatest circumference. So important is it as a plantation tree, that Mr. Lowe, in his Survey of the County of Notts., states that, at 8 years' growth, the poles yielded a net profit of 21*l.* per acre; and in 2 years longer, they would probably have produced 30*l.* per acre. The late George Biggin, Esq. of Cosgrove Priory, an able chemist, ascertained that the *bark* contains the tanning principle in a superior degree to that of the Oak: it is supposed by some, that the medical properties said to belong to the var. α. are attributed to it by mistake, and should be referred to the present; this opinion, however, has not been confirmed. As to *var.* γ.; its "bark is polished like porcelain: the buds are black in spring: young shoots often crimson, the colour extending occasionally to the midrib of the leaves." Leefe. The *leaves* of *var.* γ. are quite glabrous, pale and much reticulated beneath; of *var.* α. often broad at the base, glabrous or slightly downy beneath when young; and of *var.* β. narrower than the last and more downy beneath. *Var.* β. and γ. seem to occur nowhere in a wild state: of the former the fertile, and of the latter the sterile plants alone are, we believe, known, at least in this country.

11. S. *álba* L. (*common white W.*); leaves elliptical-lanceolate regularly glanduloso-serrate acute when young more or less silky beneath often so above, ovaries ovate-acuminate nearly sessile glabrous, stigmas nearly sessile short recurved bifid, scales short pubescent at the margin much shorter than the stamens and about the length of the ovary.—α. young leaves silky on both sides. *E. B.* t. 2430.—β. under-side of the leaves less silky ultimately quite glabrous and glaucous. S. cærulea (blue Willow), *E. B.* t. 2431.

River-sides, moist woods, &c. ħ. 5. — A well known *tree* of considerable size, and of which the *var.* β. is of such exceedingly rapid growth, that it is by many still deemed a distinct species; and

Mr. Forbes observes that the new *leaves*, after the wood has been cut, are of a larger size, and, as well as the twigs, of a darker hue than the real *S. alba*. They seem to be alike valuable for their *bark* and their timber, and are both amply deserving of cultivation.

12. S. *vitellína* L. (*yellow W.*, or *golden Osier*); leaves lanceolate with glandular serratures acuminate more or less silky beneath often so above, germens lanceolate sessile glabrous, style short, stigmas bipartite, scales lanceolate pointed longer than either stamens or style. *E. B.* t. 1389.

Hedges and osier-grounds, in many places. ♄. *5.* — This is rendered striking by the bright yellow colour of its *branches*, and the *leaves* often partake of the same tint. With this exception, the plant, as Mr. Borrer observes, is "*extremely* nearly allied to *S. alba*." Mr. Leefe, and many others, conjoin them; and our only doubt arises from the long scales of the catkin imparting quite a peculiar aspect, a character, however, which Mr. Borrer does not notice, and none of the others are of much value.

vi. *Stamens 2, distinct. Capsules on long stalks, silky. Catkins short, lax, appearing before the leaves on short lateral stalks with sometimes a few leafy bracteas at their base; their scales dark at the point, short, persistent. Leaves lanceolate, serrate, silky when young, with small stipules.* Griseæ *Borr.*

13. S. **petioláris* Sm. (*dark long-leaved W.*); leaves when young gray with long silky hairs especially beneath, capsules ovate-lanceolate, stigmas ovate nearly sessile, scales villous (black) scarcely longer than the pedicel. *E. B.* t. 1147.

Scotland; *Dickson*. Angusshire, and Possil Marsh near Glasgow: *G. Don*. ♄. *4.* — Not uncommon in North America, and certainly not a European species, although perhaps as wild in this country as most of our other tree-willows. A species very distinct from any of the preceding, nearly allied to *S. grisea* W., if not the same. *Branches* dark. *Leaves* dusky-coloured, grayish-green, silky with short soft hairs; in a young state even silvery beneath, afterwards almost glabrous.

vii. *Stamens 2, distinct (or sometimes combined at the base?). Capsules distinctly stalked, silky. Style short. Catkins sessile, short and rather dense, bracteated at the base; scales discoloured at the end. Leaves small or narrow, or with a satiny pubescence. Small, erect, or procumbent shrubs.* Argenteæ *Koch* (Rosmarinifoliæ, Fuscæ, *and* Ambiguæ *Borr.*).[1]

14. S. **rosmarinifólia* L. (*Rosemary-leaved W.*); erect slender, leaves linear-lanceolate with a straight point silky (the

[1] We have conjoined Mr. Borrer's three groups. Between some forms of *S. fusca* with the upper side of the leaves downy or silky, and *S. ambigua*, there is absolutely no difference, except that the leaves of the former then exhibit less evident serratures, a more prominent venation above, and have the point of the

young ones especially) quite entire or with a few very minute glandular teeth, catkins at first shortly ovate or oblong afterwards more lax, ovaries stalked silky oblong-lanceolate acuminate, style about as long as the linear divided or entire stigmas, scales short villous. *E. B.* t. 1365.

Found by *Sherard.* Sent by *Mr. Dickson* to *Mr. Crowe* (*Sm.*) ♄. 4. — A slender, upright *shrub*, 2—3 feet high, with silky *leaves*, nearly glabrous in the adult plant. Whole plant, when dry, often turning almost black, as does the following. Mr. Leefe observes that *S. rosmarinifolia*, L. and Koch, differs in the fertile catkins being almost round and very short, buried in the floral leaves, and not curved as in E. Bot. : we find them to vary much in these respects.

15. S. *angustifólia* Wulf.? (*little Tree W.*); erect slender, leaves linear-lanceolate nearly glabrous with minute glandular teeth the young ones silky glaucous beneath, catkins ovate erect, ovaries ovate-acuminate silky stalked, style about as long as the broad erect entire stigmas, scales very villous nearly as long as the young germens afterwards often as short as the stalk to the capsule. S. Arbuscula *Sm.: E. B.* t. 1366 (not of *Continental authors*).

Highlands of Scotland. Clova mountains. Near Dumfries. ♄. 4. — The large broad leaves represented in E. Bot. cannot belong to this species. Mr. Forbes has well observed that the present is so closely allied to the last that he is disposed to consider them the same ; and it is certainly a matter of surprise, that two plants, so much resembling each other, should be placed so far apart as they are in *E. Fl.* Still we agree with Mr. Borrer in thinking them distinct, though the difference lies almost entirely in their *germens*, which are broader at the base in the present plant, with ovate and quite entire *stigmas*, and more shaggy scales. Although this may be, as Sir J. E. Smith assures us, the *S. Arbuscula* of *Linn. Herb.*, yet Mr. Borrer, on a recent examination, has come to a different opinion, and the plant is quite at variance with the *Arbuscula* of other Continental authors, and with the figures both of Linnæus and Wahlenburg, which represent the leaves distinctly serrate.

16. S. *Doniána* Sm. (*Don's W.*) ; branches at first procumbent then erect and twiggy, leaves partly opposite oblong-lanceolate broadest above the middle acute slightly serrate even livid and somewhat silky beneath, stipules linear, catkins erect cylindrical compact, ovaries stalked silky longer than the obovate scale, stigmas short emarginate. *E. B. S.* t. 2599.

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leaves conspicuously bent back to one side. *S. fusca* and *S. ambigua* have broad leaves ; the first has them usually glabrous above, and there, when dried, prominently reticulated and often black ; the latter always of an ashy colour. *S. rosmarinifolia* has narrow silky leaves with linear stigmas ; *S. angustifolia* narrow leaves, broad erect stigmas, and lax short catkins ; *S. Doniana* usually narrow leaves and dense catkins.

Scotland. ♄. 5. — *Shrub* 6 feet or more high, resembling *S. purpurea*, but Mr. Borrer considers it correctly placed in the present division, on account of its stalked germens, which have little resemblance to those of the *Monandra*, but are closely analogous to those of *S. fusca*, to which species he thinks there is considerable affinity in the foliage also. We believe that the plant with *sterile flowers* is unknown. Mr. Babington and Mr. Leefe, indeed, mention that the stamens are said (on the authority of Koch) to be monadelphous, and the anthers ultimately yellowish-brown, not black; but perhaps one of the *Monandræ* has been mistaken for it.

17. S. *fúsca* L. (*dwarf silky W.*); leaves elliptical or elliptic-lanceolate or linear-lanceolate broadest about the middle acute entire or with minute glandular serratures somewhat downy glaucous and generally very silky beneath, ovaries upon a long stalk lanceolate very silky, stigmas bifid. S. repens *Hook. Scot.* 1. p. 284.—*α.* stem much branched upright decumbent below, leaves elliptical-lanceolate with a straight point. S. fusca *E. B.* t. 1960. —*β.* stem depressed with short upright branches, leaves elliptic-lanceolate with a straight point. S. repens *E. B.* t. 183 (*with young leaves only*).—*γ.* stem prostrate with elongated straight branches, leaves elliptic-oblong with a curved point. S. prostrata [1] *E. B.* t. 1959.—*δ.* stem recumbent, leaves elliptical. S. fœtida *Sm. E. Fl.* vol. iv. p. 208. S. adscendens *E. B.* t. 1962. *subvar.* leaves smaller. S. fœtida *β. E. Fl.* vol. iv. p. 208. S. parvifolia *E. B.* t. 1961.: *Salict. Wob.* p. 161. t. 81.—*ε.* stem procumbent or erect, leaves elliptic-lanceolate with a recurved point. S. incubacea *L.*: *E. B. S.* t. 2600 (soon glabrous above), *subvar.* leaves long, covered with dense gray pubescence above, and sometimes narrow.—*ζ.* stem erect or spreading, leaves elliptical with a recurved point very silvery beneath usually long, covered with gray pubescence above. S. argentea *E. B.* t. 1364.

Moist and dry heaths, moors and sandy situations. ♄. 4, 5. — Mr. Borrer not only consents to the union of the above-mentioned species of other authors, but has suggested the order of their arrangement, with the single exception of *S. fusca* of *Sm.*, which he is disposed to consider different from that of Linnæus, at least as seen growing in the garden; for he allows that "the dried specimens show no character;" in which latter opinion we cordially agree with him. — The plant itself is usually a small *shrub*, with rather long straight *branches*, but varying exceedingly, according to situation and other circumstances; as do the *leaves*, which are more or less glabrous above in the first four varieties, while in the two last they are often downy above for a much longer period and do not acquire by drying the dark colour of the others: all are more or less silky beneath where the nerves are prominent, and prominently reticulated above.

[1] The Epping Forest "*prostrata*," in *E. Fl.*, is, on the authority of Mr. E. Forster, one of the varieties of *S. ambigua*.

18. S. *ambígua* Ehrh. (*ambiguous W.*); "leaves oval obovate or lanceolate pubescent slightly toothed with a recurved point somewhat rugose above glaucous with prominent veins beneath, catkins stalked erect cylindrical, germens stalked densely silky, style very short, stigmas short at length cloven." *Borr.* in *E. B. S.* t. 2733.—*α.* leaves oval or obovate moderately hairy. S. ambigua *Ehrh.* (not of *Pursh*). S. versifolia *Ser.*—*β.* leaves obovate very silky on both sides.—*γ.* leaves obovate lanceolate or oblong moderately hairy or silky. S. spathulata *Willd.*

α. Gravelly heaths. Sussex, Essex, Suffolk. Perthshire, Aberdeen, Inverness, Angus, Caithness, Orkney, and the Hebrides. — *β.* Bogs near Forfar. — *γ.* Epping Forest; Hopton, Suffolk. Between Balnagard and Aberfeldie, Scotland. ♄. 5. — A straggling shrub, with branches sometimes procumbent, sometimes rising a foot or two from the ground; at other times it is of an upright growth, 3—4 feet high. Young *twigs* downy. *Leaves* thin, somewhat rugose, with veins sunken above and prominent beneath; upper side variable as to pubescence and silkiness; under sometimes quite bare and glaucous, but usually with copious appressed silky or cottony hairs; edges more or less recurved. "*S. ambigua* approaches on the one side to *S. aurita*, with the smallest varieties of which it is most likely to be confounded, and on the other to *S. fusca*; differing from the former by its less rugose, less vaulted, and less distinctly serrate leaves, and their more delicate texture and less woolly pubescence, and the smaller, flatter, and less oblique stipules; from the latter by its less silvery pubescence, and the more uneven upper surface of its leaves, and the more prominent veins beneath." *Borr.* Koch regards it as a hybrid between the two. They are altogether extremely *ambiguous* plants. The *var. β.* is of the most peculiar aspect: we have never seen any specimens, except those from Mr. Drummond, and what we ourselves collected in Restennet Moss near Forfar.

viii. *Stamens 2, distinct. Capsules crowded, sessile, oblong-ovate, downy. Stigmas ovate, almost sessile. Catkins cylindrical, terminal, stalked, appearing with the full-grown leaves. Scales pale brown. Leaves roundish, extremely reticulated beneath. Dwarf alpine shrubs, with the stem creeping below the surface of the ground.* Reticulatæ *Borr.*

19. S. *reticuláta* L. (*reticulated W.*); leaves nearly glabrous above, glaucous beneath. *E. B.* t. 1908.

Lofty mountains of the middle and north of Scotland. ♄. 6, 7. — A species said to have been found in England and Wales, but not on good authority. Stem short, very woody, much branched, procumbent, when cultivated forming a beautiful tuft of considerable extent, with its curiously reticulated and large handsome *leaves* white or glaucous on their under-side. The *catkins* and *stems* have a reddish or purplish tinge.

ix. *Stamens 2, distinct. Capsules sessile, ovate, very downy or silky. Catkins somewhat compact, lateral, appearing with the leaves; their scales discoloured at the end. Leaves between roundish-ovate and oblong-lanceolate, soft, hairy and silky, often white and cottony beneath. Small erect shrubs.* Glaucæ *Borr.*

20. S. *arenária* L. (*downy Mountain W.*); leaves cottony and sometimes also silky beneath, catkins usually naked at the base rarely on lateral leafy shoots, style at length elongated bifid at the apex with bipartite stigmas.—*α.* leaves with gray or whitish wool or down on the upper-side, which sometimes falls off through age leaving the dull surface of the leaf, styles always elongated, catkins leafless. *E. B.* t. 1809. S. Stuartiana *Sm.: E. B.* t. 2586. S. limosa *Wahl.*—*β**. leaves elliptic-lanceolate, very soon quite glabrous and shining above, styles usually short at first, lengthening as the fruit ripens, catkins leafless (or rarely on lateral leafy shoots). S. glauca *Sm.: E. B.* t. 1810.

α. Highland mountains, especially those of Breadalbane and Clova. ♄. 6, 7. — It is almost impossible to refer the Linnæan synonyms to these plants, without some objections being started. Our var. *α.* is certainly the *S. arenaria* L.; but that name was given in consequence of Linnæus confusing with it *S. fusca* var. *ζ.*, which alone merited it. The S. *arenaria* Sm. appears to be the *S. Lapponum* L., as to the synonym of the *Flor. Lapponica* (where he says *folia subtus crassissimo vellere albo tecta*) and perhaps of the first edition of the *Flor. Suecica*, but not that of the second, where *S. sericea* Vill. is described; and this last, according to Smith, is the *S. Lapponum* of the Linnæan herbarium: again, *S. Stuartiana* Sm. seems to be the state of *S. arenaria*, of which a leaf is figured in the *Flor. Lapponica*. The variety *α.* varies much in the foliage: we have collected specimens in the Clova mountains with some leaves roundish-obovate and slightly cordate, and others elliptic-oblong: this we suspect to be the *S. lanata* of G. Don, the leaves being more white and woolly than usual on both sides. *S. arenaria* Sm. is said to have the leaves ovate, acute, and only slightly downy above, while in *S. Stuartiana* they are sometimes narrow oblong-lanceolate and very shaggy above; but these are extremes; and there is a complete transition in the form of the leaves and pubescence, the latter not always becoming denser as the leaves are narrower: we do not therefore distinguish them. For our *var. β.* we give no stations, because we have no reason to believe it indigenous, Mr. Don's specimens now before us from the Clova mountains being the same as *var. α.*, and belonging to *S. arenaria* E. Bot.; it is commonly cultivated, being a handsome plant, and is common in Switzerland (where we believe our *var. α.* does not occur), but is not, so far as we know, found either in Sweden or Lapland: it has more pretensions to be called a distinct species than most others of the genus. From this, *S. sericea* Vill. (*S. Lapponum* Linn., at least in part, and *S. glauca* of the Swiss and German Botanists, and perhaps also of Linn. Fl. Lapp., but apparently not of his herbarium) differs by the bipartite styles, and total want of cottony down on the leaves, the

silky hairs found on both sides being rubbed off, leaving them glaucous beneath : the catkins are more constantly on lateral leafy shoots.

x. *Stamens 2, distinct. Capsules shortly stalked, or almost sessile, somewhat lanceolate, hairy or silky. Style conspicuous. Catkins lateral, nearly sessile, appearing with the leaves, with leaf-like bracteas at the base ; their scales discoloured at the end. Trees of a more or less considerable size, with long pliant branches. Leaves lanceolate.* Viminales *Borr.*[1]

* *Stigmas long, linear and slender.*

21. S. *viminális* L. (*common Osier*) ; leaves linear or linear-lanceolate obscurely crenate white and silky beneath, stipules very small sublanceolate, ovaries almost sessile. *E. B.* t. 1898.

Wet places, osier grounds, &c., frequent. ♄. 4, 5. — *Branches* straight and twiggy. This is held in great esteem for basket-work.

22. S. *stipulâris* Sm. (*auricled O.*) ; leaves lanceolate very indistinctly crenate white and downy beneath, stipules large semicordate acute often with a tooth or lobe at the base, ovaries nearly sessile. *E. B.* t. 1214.

Osier-holts, hedges and woods, near Bury St. Edmund's. ♄. 3—5. — Allied to the preceding in fructification ; differing in its large and coarser leaves, less white beneath, and with large *stipules* on the autumnal shoots.

23. S. *Smithiána* Willd. (*silky-leaved O.*) ; leaves lanceolate obscurely crenate white and satiny beneath, stipules very small narrow acute, ovaries distinctly stalked. S. mollissima *E. B.* t. 1509.

Meadows and osier-grounds. About Bury ; Glamorganshire ; near Warrington. Scotland. ♄. 4, 5. — We place no dependence on the size of the *stipules* in this and the two preceding (which are perhaps forms of the same species), and besides they are not available to a student. The only other character between the present species and *S. stipularis* consists in the almost sessile or distinctly stalked ovary, and we should therefore have conjoined them, did not Mr. Leefe consider that of sufficient importance to remove *S. Smithiana* to a separate section, while he refers *S. stipularis* as a variety to *S. viminalis.*

** *Stigmas thick, oblong, or linear-oblong. Ovary distinctly stalked ; the stalk scarcely twice as long as the nectary.*

24. S. **acuminâta* Sm. (*long-leaved Sallow*) ; leaves lanceolate-oblong pointed wavy finely toothed glaucous and downy beneath, stipules half-ovate, stigmas oblong or oblong-linear. *E. B.* t. 1434.

[1] We can scarcely point out any positive character by which to distinguish the second subdivision of this section from the *Cinereæ :* in all those which we have examined, the catkins of the present group appear along with the leaves, the capsule is on a shorter stalk, and the stigmas are never sessile.

Rather moist woods and hedges, frequent. ♄. 4, 5. — A small tree, seldom above 20 feet. Not to be distinguished from the two last when in flower, except by the shorter stigmas. Mr. Borrer observes that it is the *S. lanceolata* of Seringe: in that species, however, the stigmas appear to be constantly cloven, in ours constantly entire.

25. S. *ferrugínea* And. (*ferruginous S.*); leaves lanceolate with wavy crenatures and small teeth minutely hairy on both sides paler beneath, stipules small half-ovate, stigmas oblong. *E. B. S.* t. 2665.

Near Carlisle; Kirkby-Lonsdale; banks of the Thames; Nuthurst, Sussex. Fifeshire. ♄. 4, 5. — According to Mr. Forbes, a shrub, 12—14 feet high. *Leaves* less hairy than the last. Mr. Babington refers it to *S. Smithiana.*

xi. *Stamens 2, distinct. Capsules lanceolate-acuminate, silky, tomentose, conspicuously stalked; stalks three (or more) times longer than the nectary. Style none or much shorter than the ovate or oblong thick stigmas. Catkins sessile, lateral, at first short, afterwards more lax, appearing before the leaves; their scales discoloured at the end. Leaves more or less wrinkled and stipuled, very veiny beneath: stipules without glands on the inside. Trees or low shrubs.* Cinereæ *Borr.*

26. S. *holoserícea* Willd. (*soft shaggy-flowered Willow*); leaves lanceolate acuminate serrate glabrous above pale downy and strongly veined beneath, catkins cylindrical, germens stalked densely clothed with silky wool, stigmas ovate sessile, scales (black) very shaggy.

About Lewes, Sussex. ♄. 4, 5. — This is a plant which Mr. Borrer received from Sir J. E. Smith, marked *S. acuminata*, var. *rugosa*; but which he thinks probably allied to the *S. holosericea* of Willd. and distinguishes it from the true *S. acuminata* by its sessile pale-coloured *stigmas*, and *leaves* greener and more rugose above, and more strongly veined beneath: trusting to which we have removed it from the *Viminales* to the present section.

27. S. *cinérea* L. (*gray Sallow*); leaves obovate obovato-elliptical or obovato-lanceolate, autumnal ones pointed even serrate reticulated with prominent veins nearly glabrous and glaucous beneath with the margins sometimes recurved, stipules rounded toothed upper ones often half-cordate, style very short or none. *E. B.* t. 1897 (autumnal leaves narrow rigid and their margins recurved). S. aquatica *Sm.*: *E. B.* t. 1437 (autumnal leaves broader larger more pliant nearly flat). S. oleifolia *Sm.*: *E. B.* t. 1402 (aut. leaves narrower rigid nearly flat).

Banks of rivers, wet hedge-rows, moist woods, and swampy places, abundant. ♄. 3, 4. — Often only a *shrub*, with an erect stem and erect or spreading branches, but when protected it becomes a *tree* 20—30 feet high, with hanging-branches. It is of no beauty and

little use. In specimens of "*S. cinerea*," named by Sir J. E. Smith himself, the lower stipules are as reniform as in the two other supposed species, which we cannot distinguish as permanent varieties.

28. S. *aurita* L. (*round-eared S.*); leaves obovate repando-dentate wrinkled with veins more or less pubescent very downy beneath tipped with a small bent point recurved at the margin, stipules roundish, style very short. *E. B.* t. 1487.

Moist woods and thickets, abundant. ♄. 4, 5. — A tall shrub or small bushy *tree*, with straggling *branches*. "One of the least equivocal species, although its *leaves* vary in length and roundness: they are usually much wrinkled and vaulted, the *stipules* large and stalked." *Borrer.*

29. S. *capréa* L. (*great round-leaved S.*); leaves roundish-obovate or ovato-elliptical even acute, at first entire downy above tomentose beneath, autumnal ones serrate and waved at the margin nearly glabrous above downy beneath, stipules somewhat reniform toothed, style very short or none. *E. B.* t. 1488. S. sphacelata *Sm.: E. B.* t. 2333.

Woods and dry pastures, common. ♄. 4, 5. — A small *tree*, distinguished by being in spring loaded with handsome yellow *blossoms* before any of its leaves appear. The *catkins* of both kinds are broader and shorter than in most of the species with crowded flowers. The Highlanders employ the *bark* to tan leather, and the handles of various agricultural implements are made of the wood. The bark has been used with success, instead of that from Peru. Various species of *Salix* have occasionally their leaves sphacelate or discoloured at the point; and such varieties may sometimes be propagated by cuttings; that called *S. sphacelata* by Smith seems to be that state of the present species, and is probably not unfrequent.

xii. *Stamens 2, usually distinct. Capsules conspicuously stalked, conical-subulate. Style elongated, bifid. Stigmas short. Catkins lateral, sessile, or on short bracteated but not leafy stalks; the scales discoloured at the end. Leaves crenate-dentate or serrate, between roundish-obovate and lanceolate, stipules when conspicuous with glands on their inside at the base. Shrubs or small trees.* Phylicifoliæ (Nigricantes *and* Bicolores *Borr.*).

30. S. *nígricans* Sm. (*dark-leaved S.*); young shoots densely pubescent or hairy towards the summit, leaves usually dull more or less glaucous beneath turning black by drying (especially the young ones).—*α*. ovaries and stalks silky, stems erect. S. cotinifolia *Sm.: E. B.* t. 1403 (leaves elliptical-orbicular and often cordate at the base). S. nigricans *E. B.* t. 1213 (leaves elliptic-lanceolate). S. Forsteriana *Sm.: E. B.* t. 2344 (leaves elliptic-obovate acute).—*β*. ovaries glabrous at the base where covered by the scale, stalk hairy, stems erect (leaves elliptical acute 1½—2 inches long). S. propinqua *Borr.: E. B. S.* t. 2729.—*γ*. ovaries silky or glabrous at the base where covered

by the scale, stalk hairy, stems trailing (leaves elliptical-obovate). S. rupestris *Donn: E. B.* t. 2342.—*δ.* ovaries glabrous, stems erect. S. hirta *Sm.: E. B.* t. 1404 (leaves elliptic or elliptic-oblong, branches densely hairy, capsule not wrinkled, its stalk very hairy). S. Andersoniana *Sm.: E. B.* t. 2343 (leaves elliptic oblong, branches minutely downy, capsule not wrinkled, its stalk very hairy or quite glabrous). S. Damascena *Forb. E. B. S.* t. 2709 (leaves ovate or rhomboidal, capsule not wrinkled, stalk hairy or glabrous). S. petræa *And.: E. B.* t. 2725 (leaves oblong, capsule wrinkled towards the point, stalk hairy).

Fens, osier-grounds, sides of streams, and on the mountains, principally in the north of England and Scotland. ♄. 4—6.— A most variable species; but in this country, whether cultivated or wild, the foliage constantly turns black when pressed and dried, however carefully this be done. We must allow, however, that Swiss specimens do not exhibit this character so decidedly, and hence Mr. Seringe conjoins it with *S. phylicifolia*, and indeed there is scarcely any other difference between them. Between the forms represented and described in *E. Bot.* and the *Supplement*, and the *Eng. Flora*, are innumerable intermediate ones; so that if they be good species, we must increase their number without end. Our *var.* β. we refer here, instead of to the next, as in last edition, such being, we believe, Mr. Borrer's opinion. Our γ. we retain as a variety, because it is more decidedly alpine and trailing, and Mr. Forbes observes that its *branches* are tough and useful for tying: in the herbarium it cannot be recognized, and indeed Mr. Borrer referred specimens gathered by ourselves on Ben Lawers to *S. Fosteriana;* it is usually said to have the stigmas "blunt and undivided," which applies to most cultivated specimens, but wild ones show them entire and bipartite on the same catkin, and even on the same style. As to our *var.* δ., there seem to be two states: in the one the stalks to the ovaries are very hairy, in the other glabrous or nearly so: in Mr. Borrer's specimens of *S. Andersoniana* they are hairy, while Smith describes them glabrous: in Mr. Winch's specimens from Heaton Dene the stalks are hairy, although glabrous in those cultivated from cuttings sent by him (under the erroneous name of *S. Fosteriana*). We find *S. Damascena* to vary in the same way.

31. S. *laúrina* Sm. (*intermediate W.*); young shoots and leaves densely pubescent or hairy towards the summit, leaves at length glabrous glaucous beneath dull green above after being dried (except the young ones which sometimes become slightly black).—*α.* stalk of ovary hairy. S. tenuior *Borr: E. B. S.* t. 2650 (leaves narrow obovate-lanceolate 2½—3 inches long, ovary silky, style longer than the stigmas). S. laurina *Sm.:* S. bicolor *E. B.* t. 1806 (leaves elliptic oblong acute 2½—4 inches long, ovary silky, as long as the stigmas.)—*β.* ovary and stalk quite glabrous. S. tenuifolia *Sm.: E. B. S.* t. 2795 (leaves elliptical acute or pointed more serrate about 2½ inches long).

Woods, thickets, and river-banks, principally in England. ♄. 4, 5. — This species has the thinner and duller foliage of the last; but the leaves, except the upper ones on a shoot, do not turn black in drying; thus it holds a kind of intermediate place, and appears to unite the two. The form called *S. laurina* by Smith (or *S. bicolor* E. B.) has the leaves considerably larger than the others and it often becomes a small tree; it thus is in some measure allied with *S. caprea;* the style likewise is shorter than we usually find in this group, the stigmas are often bipartite, and the scales frequently as long or longer than the stalk of the ovary, contrary to the description usually given. Of our var. β. we have only seen the leaves.

32. S. *phylicifólia* L.: Wahl. (*Tea-leaved W.*); branches twiggy, shoots and leaves soon quite glabrous, leaves dark green rigid shining above and glaucous beneath not becoming black by drying, stigmas entire or bipartite before dividing oblong or ovate (rarely linear?). — *α.* ovaries and stalk silky or hairy. S. radicans Sm. S. phylicifolia *E. B.* t. 1958 (leaves obovate or elliptic-lanceolate, style elongated). S. Davalliana *Sm.: E. B. S.* t. 2701 (leaves obovate-lanceolate pointed, style as long as the stigmas). S. Weigeliana *Borr.: E. B.* t. 2656 (leaves broadly elliptical rhomboidal or almost round with a short point, style longer than the stigmas). S. amœna *Borr.* S. nitens *Ander.: Borr. in E. B. S.* t. 2655 (leaves ovate or elliptical acute or pointed, style longer than the stigmas). S. Croweana *Sm.: E. B.* t. 1146 (leaves elliptic-obovate scarcely acute, stamens united at the base, style about as long as the stigmas). S. Dicksoniana *Sm.: E. B.* t. 1390 (leaves elliptic or elliptic-obovate with a point, style about as long as the stigmas).— β. ovaries glabrous below silky towards the point. S. laxiflora *Borr.: E. B. S.* t. 2749 (leaves broadly obovate narrowed at the base, stigmas linear divided?) S. tetrapla *Walk.: E. B. S.* t. 2702 (leaves elliptic oblong pointed). S. Weigeliana var. *Borr. sub. E. B. S.* t. 2656 (leaves elliptical rhomboidal or almost round with a short point).—γ. ovaries entirely glabrous. S. Borreriana *Sm.: E. B. S.* t. 2619 (leaves broadly or elliptical-lanceolate, stalk of ovary hairy, style elongated). S. phillyreifolia *Borr.: E. B. S.* t. 2660 (leaves elliptic lanceolate acute at each end, stalk of ovary glabrous, style as long as the stigmas).

Principally in valleys in mountainous districts; rarely in the low parts. ♄. 4, 5.—Twiggy *bushes.* We can find no good characters to distinguish the above numerous supposed species; and notwithstanding we have been supplied with cultivated specimens by Mr. Borrer in illustration of the figures in *E. Bot.* and the *Supp.*, we cannot refer our wild ones (and those we have ourselves obtained from gardens) with certainty to any of them, so variable is the foliage on the same bush. The figure of *S. Dicksoniana* in E. B. is taken apparently from a specimen in which the catkins are very young; they

afterwards elongate, but are scarcely ever more than 1½ times their breadth when the capsules are mature; it is a smaller shrub than usual in this species, and in that respect more like the next group: its stigmas are at length bifid. *S. Croweana* has certainly the ovaries very cottony, as Smith says, though they are represented glabrous in the *Sal. Wob.* t. 52, "by a mistake of the artist," *Forbes in litt.* We have the fertile plant of apparently the same from the Ed. Bot. Garden, where it was introduced by the late Mr. MacNab and marked "common about Edinburgh:" a specimen from Smith has the stamens scarcely monadelphous even at the very base, and the accompanying leaves do not differ from those of *S. nitens;* Mr. Borrer's fertile plant with glabrous germens is possibly *S. phillyreifolia.* We are not acquainted with *S. laxiflora*, and have seen no form with long linear stigmas as in the figure and description of that species in *E. B. Supp.* We cannot refer *S. bicolor* Ehrh.? (*S. tenuifolia* E. B. t. 2186, and *S. floribunda* Sal. Wob. t. 54) to any of the above varieties, as the fertile plant is not as yet known with certainty; but the same form of leaf occasionally occurs in *S. Borreriana, amœna* (which is the *Weigeliana* Willd. and Sal. Wob.), and also in *S. nitens;* Mr. Forbes, however, remarks that the "young leaves are tinged with red. The foreign *S. bicolor* seems to be precisely *S. Croweana*, but with the stamens distinct.

xiii. *Stamens 2, distinct. Anthers yellow or brown when empty. Ovaries oblong or ovate, densely pubescent, nearly sessile; stalk when present much shorter than the nectary. Style as long as the ovate emarginate or cloven obtuse stigmas. Catkins appearing along with the leaves, terminal on short few-leaved lateral shoots, at first very compact; scales of a uniform yellowish-brown colour when dried, half as long as the ovary, hairy. Leaves more or less veiny above; stipules none or minute. Small erect or diffuse rarely prostrate shrubs: stems above ground.* Vacciniifoliæ *Borr.*

33. S. *Arbúscula* L.: Wahl. (*small Tree W.*); leaves lanceolate-ovate or ovate finely serrate. S. myrsinites *Lightf.* — *α.* leaves opaque above glaucous beneath. S. vacciniifolia *Walk.: E. B.* t. 2341 (leaves flat smaller narrower and less prominently veined above). S. venulosa *Sm.: E. B.* t. 1362 (leaves flat narrow ovate very much veined above). S. carinata *Sm.: E. B.* t. 1363 (leaves ovate folded so as to form a keel). S. prunifolia *Sm.: E. B.* t. 1361 (leaves broadly ovate flat).—*β.* leaves (broadly or roundish ovate prominently veined above) green but scarcely shining on both sides.

α. Highland mountains, not unfrequent. — *β.* Ben Lawers. ♄. 6, 7. — "Twigs of the fertile plant red, of the sterile dull green." *Lightf.* All these are, we believe, decumbent *shrubs* on their native mountains, but when cultivated, they become more erect and about 2 feet high. As a species this is closely allied to *S. prostrata* Ehrh., which however has narrow entire leaves. We cannot satisfactorily distinguish Smith's four species; he separates *S. vacciniifolia* chiefly on account of the leaves being narrower and silky beneath and the

stem decumbent; but the leaves are frequently, and when old always, glabrous, and besides all the others are in the wild state occasionally silky beneath; so that his attributing a decumbent stem to it and an erect one to the others may arise from his description of it having been made from wild specimens, of the others from cultivated plants. Our *var.* β. we never met with but once, and long hesitated whether to refer it to the present or to the next group: it is indeed precisely intermediate, and may perhaps be a hybrid between some of the forms of *S. Arbuscula* and *S. myrsinites:* the leaves are not glaucous beneath, and the catkins are shorter and more lax than in this group; but the ovaries are almost sessile, and the colour of the scales and the numerous lateral flower-shoots indicate its greater affinity to *S. Arbuscula:* in some respects it is very closely allied to *S. ovata* Ser., but wants the silky hairs so abundant in young leaves of that species.

xiv. *Stamens 2, distinct. Anthers yellow or brown when empty. Ovaries lanceolate, silky, stalked; stalks usually as long as, or at length longer than, the gland. Style more or less deeply bifid, as long as the cloven obtuse stigmas, or longer, Catkins appearing with the full-grown leaves, terminal on lateral or terminal leafy shoots, soon becoming lax; scales blackish when dried, hairy and shining above, much shorter than the ovary. Leaves veiny, never glaucous beneath; stipules ovate or lanceolate, conspicuous on the autumnal shoots. Small, much branched shrubs; stems above ground.* Myrsinites *Borr.*[1]

34. S. *myrsinites* L. (*green Whortle-leaved W.*); leaves waved serrate with very prominent veins often hairy at length shining blackish when dried, (catkins short, style cloven to the middle, longer than the stigmas?). — *α.* leaves roundish or elliptical or obovate. *E. B.* t. 1360. — β. leaves (smaller) somewhat cordate at the base. — γ. leaves (smaller than *α.*) ovate or oblong rather acute. S. arbutifolia *Sm.* S. myrsinites *Linn. Lapp.* t. 7. f. 6. t. 8. f. *f.: Fl. Dan.* t. 1054. — δ? leaves lanceolate.

Highland mountains, but rare. — *α.* Craig-challeach; Braigh-Riach; Clova mountains. — β. Clova mountains (July 1824). — γ. Craig-challeach. — δ. Clova mountains. ♄. 6. — We do not find catkins on any of our Scotch specimens, and therefore cannot be quite certain that this portion of the above character applies to them. The figure in *E. B.* is from cultivated specimens; Mr. Stuart's plant from Glen Coe, quoted there, belongs to *S. procumbens;* but Mr. Dickson's was probably the same as our own and from the Breadalbane mountains. Of our *var.* δ. we have only seen a single specimen; some of

[1] *S. retusa* is a prostrate glabrous shrub, with veiny obovate-elliptical or cuneate oblong not glaucous leaves, glabrous ovate shortly stalked germens, the stalks longer or shorter than the nectary in the same catkin, and catkins usually few-flowered and similar to those of *S. herbacea.* Fries states that beautiful specimens of the *var. serpyllifolia*, collected by Mr. Winch in Breadalbane, are preserved in Hornemann's herbarium. This must be a mistake: Mr. Winch's *S. retusa* is that of Withering or *S. procumbens* Forbes, and is widely different from the true one, which is not, we believe, a northern species, and is considerably unlike any either of the present or last group.

its leaves are 1½ inch long and only ½ inch broad, they are hairy, but shining when the hairs are rubbed off. In *S. arbutifolia* of Switzerland the leaves, which are not twice as long as broad and are always pointed, seem never to become black when drying; and its catkins are almost as elongated in the next species.

35. S. *procúmbens* Forbes (*smooth-leaved alpine W.*); leaves oval (rarely acute) obscurely serrate shining quite glabrous not black-when dried, catkins elongated, style cloven to the middle (or below it) as long as the stigmas. *Sal. Wob.* t. 61.: *E. B. S.* t. 2753. S. retusa *With. Bot. Arr.* t. 31. S. lævis *Brit. Fl.* ed. 1. p. 482.

Highlands of Scotland. Glen Coe. Breadalbane mountains, 1801. ♄. 6. — A low procumbent *shrub*, bearing a considerable resemblance to the last, but distinct, if our description of its catkins applies to British specimens. It was originally communicated to Withering "by Mr. Griffith, to whom Mr. Townson sent roots from Scotland under the name of *retusa*," and first noticed in one of the early editions of his work: it is also inserted in Hull's Brit. Flora in 1799. Mr. Winch found it in 1801, but he retained no notes of the precise locality, and it has not been re-discovered. Where Mr. Stuart met with it we do not know. The *catkins* are in maturity three or four times as long as those of *S. myrsinites*; the *leaves* are flatter, less serrate at the margin, and dry to a yellowish-brown colour.

xv. *Stamens* 2, *distinct. Anthers yellow or brown when empty. Ovaries ovate-lanceolate, shortly stalked; stalk mostly shorter than the gland. Style bifid, as long as the obtuse bifid stigmas. Catkins appearing with the full-grown leaves, terminal, few-flowered; scales brownish, glabrous. Leaves roundish, serrate, with elevated veins, glabrous, not glaucous. Dwarf alpine prostrate shrubs, the stems creeping below the surface.* Herbaceæ *Borr.*

36. S. *herbácea* L. (*least W.*); leaves orbicular serrate glabrous shining veined, ovaries glabrous. *E. B.* t. 1907.

Snowdon and other Welsh mountains. Skiddaw. Plentiful upon the summits of all the Highland mountains. ♄. 6. — The least of our British species, though not so small as is generally supposed, for its *stems* divide and creep below the surface of the earth, scarcely rising an inch above. In the Botanic Garden of Edinburgh what was supposed to be this species has acquired a prostrate woody stem, 2—3 feet long and nearly as thick as the little finger; but it more resembles the true *S. retusa*, and if really from the mountains of Sutherland, from whence it is understood to have been brought by the late Dr. Graham, it is worthy of being sought for.

xvi. *Stamens mostly* 2 *and distinct. Anthers permanently yellow. Ovaries glabrous, lanceolate, acuminate. Style elongated, bifid. Stigmas entire or bifid. Catkins appearing before the leaves, sessile, terminal and lateral, large, obtuse, with very shaggy and silky scales. Leaves broadly elliptical or roundish, large, glaucous beneath; stipules large*

on the autumnal shoots. Shrubs 1—6 feet high, with numerous irregular crooked branches and hairy young shoots. Hastatæ *Borr.*

37. S. **hastáta* L. (*Apple-leaved W.*); leaves broadly elliptical waved thin and crackling quite glabrous usually serrulate, stipules heart-shaped serrate about as long as the petiole, catkins clothed with silvery hairs, ovaries distinctly stalked. S. malifolia *Sm.*: *E. B.* t. 1617.

Sands of Barrie, near Dundee, Scotland. Norfolk? ♄. 5. — It is most improbable that this plant, which is truly alpine on the Continent, growing in Switzerland only at great elevations, should be even naturalized upon the sands of Barrie, where Drummond met with it: the Norfolk station is entirely hypothetical, and equally unlikely. *Stem* usually 1—2 feet high when growing on the Alps, sometimes, however, rising to the height of 6 feet, as in our gardens. Remarkable for its broadly elliptical, shortly accuminate glabrous *leaves*, large stipules, and very shaggy compact *catkins*, about $1\frac{1}{2}$ inch long. Wahlenberg, Seringe, and Mr. Borrer unite in considering S. *malifolia* Sm. as only a state of *S. hastata* L., with a more attenuated base to the leaf; the first of these indeed says (Fl. Lapp. p. 268.) that all forms of the leaf, between roundish with a cordate base and lanceolate, may be observed on the same plant; and this is confirmed by Mr. Forbes, who received from Sir J. E. Smith plants of S. *malifolia*, and found that the leaves of their vigorous shoots became cordate.

38. S. *lanáta* L. (*woolly broad-leaved W.*); leaves broadly oval pointed entire shaggy, stipules oval pointed entire, barren catkins clothed with yellow silky hairs, ovaries almost quite sessile. *E. B. S.* t. 2624. S. chrysantha *Fl. Dan.* t. 1057. S. caprea *Fl. Dan.* t. 245.

Scottish mountains, rare. Glen Dole, Whitewater, Canlochan, and Glen Callater, all in the Clova mountains, Angusshire; Meal-Cuachlar, 8 m. W. of Killin. ♄. 5, 6. — About 2 (or when cultivated 3) feet high, with large pale-grayish shaggy foliage, and *catkins* that may be reckoned among the handsomest of the genus. This species Wahlenberg considers the most beautiful in Sweden, if not in the whole world. "The splendid golden *catkins*," he justly observes, "at the ends of the young branches, light up, as it were, the whole shrub, and are accompanied by the tender foliage, sparkling with gold and silver." *Style* never cloven to the base, as it is incorrectly represented in Fl. Dan. t. 1057: the *stigmas* are usually entire, but are sometimes cloven on the same specimen, so that Fl. Dan. t. 245, represents well some states of this plant. *Stamens* mostly 2, but occasionally 3; *filaments* quite distinct in our specimens, but we believe they have been sometimes observed more or less combined. *Stipules* towards the extremity of the autumnal shoots often longer than the petiole, but lower down, sometimes not half as long. We have doubts if *S. lanata* of G. Don belongs to this species; in our specimen received from him neither flower nor leaves are sufficiently developed, and we incline to refer it to *S. arenaria.*

2. Pópulus *Linn.* Poplar.[1]

Scales of the *catkins* usually jagged, very rarely quite entire. *Perianth* cup-shaped, oblique, entire, surrounding the *stamens* and *pistil*; nectariferous glands 0. — *Barren fl. Stamens* 4—30. — *Fertile fl. Stigmas* 2, bipartite or 3—4-cleft. *Caps.* 2-celled by the introflexion of the edge of the valves, loculicidal.— Name: *populus*, or the *tree of the people*, for such it was esteemed to be in the time of the Romans.[1]

* *Scales of catkins hairy or silky. Catkins in fruit dense. Stamens* 4—8. *Stigmas with narrow divisions.* Leuce.

1. P. **álba* L. (*great white P.*, or *Abele*); leaf-buds downy not viscous, leaves roundish-cordate lobed toothed glabrous and shining above downy and very white beneath, old ones sometimes glabrous, fertile catkins while flowering more slender than the barren ones, scales entire or incise only at the apex, those of the barren flowers woolly of the fertile ones thinly hairy, stigmas (yellow) bipartite their segments linear. *E. B.* t. 1618.

Moist and mountain woods. ♄. 3, 4. — A large *tree*, with smooth bark and spreading branches, of very rapid growth. Old *leaves* sometimes quite glabrous on both sides. *Scales* of the fertile *catkins* caducous. It is impossible to say where this species, now so much cultivated, is truly indigenous, or if it have any pretensions to be a native of this country. The late Dr. Graham informed us that it never flowered about Edinburgh, indicating that it was a much more southern plant. The *wood* is white and soft, and only used for coarse work. All the British species have the young branches and shoots cylindrical.

2. P. **canéscens* Sm. (*gray P.*); leaf-buds downy not viscous, leaves roundish deeply waved toothed hoary and downy beneath, old ones sometimes glabrous, fertile catkins as large as the barren ones, scales of both deeply palmatifid and sericeo-pilose, stigmas (purple) cuneate irregularly 3—4-lobed. *E. B.* t. 1619.

Wet turfy meadows and dry heaths, scarcely indigenous. Frequent in Norfolk (*Sm.*). ♄. 3, 4. — *Tree* tall and handsome, of slower growth than the preceding, and producing better *wood*. Usually confounded with the last species on account of its downy leaves, and those of the young shoots from the root being often also palmately 3—5-lobed: Dr. Bromfield thinks it a variety: M. Spach, however, considers it in reality much nearer the next, from which it is only to be distinguished with certainty by the leaf-buds and the leaves of the root-shoots, which in *P. tremula* are never palmate.

3. P. *trémula* L. (*trembling P.*, or *Aspen*); leaf-buds glabrous

[1] In the whole of this genus, a transverse section of a branch exhibits the pith of nearly a regular pentagonal form: an approach to the same may also be observed in *Salix*.

shining slightly viscous, leaves nearly orbicular and bluntly sinuate-toothed soon glabrous on both sides, fertile catkins as large as the barren ones, scales of both deeply palmatifid and sericeo-pilose, stigmas (purple) cuneate irregularly 3—4-lobed. *E. B.* t. 1909.

Moist woods. Frequent in Scotland, even at a considerable elevation on the mountains. ♄. 3, 4. — The *tree* is well known by the tremulous movement of its leaves with the slightest breath of wind, which is aided by their stalks being much and laterally compressed; a character, however, to be observed in most other species. The figure in *E. Bot.* and Smith's description, are not taken from the usual form of the stigmas, although they may be occasionally divided as represented, the auricle being one of the lobes. This species alone, of all those which are reputed British, "occurs in the middle of our large woods remote from the inclosed country." — *Bromf.*

** *Scales of catkins glabrous, ciliated at the apex. Catkins in fruit lax, moniliform. Stam.* 8—30. *Stigmas reniform or roundish, crenate, sometimes 2-lobed at the apex.* Aigeiros.

4. P. **nígra* L. (*black P.*); leaf-buds glabrous viscous, leaves ovate deltoid or rhomboid cuspidate pointed crenate or serrate quite glabrous on both sides, stipules ovate acuminate, stigmas roundish 2-lobed at the apex. *E. B.* t. 1910 (not correct as to the stigmas).

Watery places and river-banks, scarcely indigenous. ♄. 4. — A very large *tree* of quick growth, producing a light not valuable wood. The well known *Italian Poplar*, or *P. fastigiata* Pers., appears to be a mere variety of the present, with erect, instead of spreading, branches.

Ord. LXXXVI. CUPULIFERÆ *Rich.*

Monœcious.—Barren fl. amentaceous or in a lax spike. *Stamens* 5—20, inserted into the base of scales or of a membranous valvate *perianth*, generally distinct.—*Fertile fl.* aggregated or spicate or amentaceous. *Ovary* with several cells, crowned by the rudiments of a closely adherent perianth, seated within a coriaceous or somewhat leafy involucre (*cupule*) of various forms. *Ovules* in pairs or solitary, pendulous or peltate. *Stigmas* several, nearly sessile, distinct. *Fruit* a bony or coriaceous 1-celled nut (a *gland*), 1—3 together, more or less enclosed in the involucre. *Seed* solitary. *Albumen* wanting. *Embryo* large: *cotyledons* plano-convex; *radicle* minute, superior. — Trees *or* shrubs. Leaves *alternate*, *simple*, *often with veins proceeding straight from the midrib to the margin.*

* *Barren flowers in a globose catkin. Anthers* 2-*celled.*

1. Fagus. Fertile flowers 2 together within a 4-lobed prickly involucre. Stigmas 3, filiform.

** *Barren flowers in a long cylindrical catkin or spike.*

† *Anthers* 2-*celled.*

2. Castanea. Fertile flowers 1—3 together within a 4-lobed muricated involucre. Stigmas usually 6 (6—8), filiform.
3. Quercus. Fertile flowers solitary within a cup-shaped scaly at length indurated involucre. Stigmas 3, oblong.

†† *Anthers* 1-*celled.*

4. Corylus. Fertile flowers aggregate in a short compact catkin. Involucre of one piece, at length enlarged leafy and laciniate, containing a single nut. Stigmas 2, filiform.
5. Carpinus. Fertile flowers in a lax catkin. Involucre of 2 distinct at length enlarged leaves, containing 2 nuts. Stigmas 2, filiform.

1. Fágus *Linn.* Beech.

Barren fl. in a globose *catkin. Perianth* companulate, 6-cleft. *Stam.* 8—15. *Anthers* 2-celled.—*Fertile fl.* 2 together within a 4-lobed *involucre. Perianth* urceolate, with 4—5 minute lobes. *Ovary* incorporated with the perianth, 3-celled, 2 cells becoming abortive. *Stigmas* 3, filiform. *Nuts* triquetrous, in pairs within the enlarged prickly involucre.—Name: φαγος, in Greek, from φαγω, to *eat*, on account of the nutritive qualities of the fruit.

1. F. *sylvática* L. (*common B.*); leaves ovate glabrous obsoletely dentate their margins ciliated. *E. B.* t. 1846.

Woods, especially on a chalky soil. Scarcely wild in Scotland, but abundant in forests in the south of England. ♄. 5. — The *wood* is employed for an infinity of purposes, by carpenters, turners, wheelwrights, &c. Swine are driven into the forests of *Beech* to feed upon the *mast* in Autumn.

2. Castánea *Tourn.* Chestnut.

Barren fl. in a very long cylindrical interrupted *spike. Perianth* single, of 1 leaf, 6-cleft. *Stam.* 8—20. *Anthers* 2-celled. —*Fertile fl.* usually 3 (1—3) within a 4-lobed *involucre. Perianth* single, urceolate, 5—6-lobed, having the rudiments of 5—12 *stam. Ovary* incorporated with the *perianth*, 3—8-celled, each cell 2-seeded, all the cells except one mostly abortive. *Stigmas* 3—8, filiform. *Nuts* 1—2 together within the enlarged prickly *involucre.*—Named from *Castanea*, in Thessaly, which produced magnificent *Chestnut* trees.

1. C. **culgáris* Lam. (*Spanish C.*); leaves oblong-lanceolate

acuminate mucronato-serrate glabrous on each side. Fagus Castanea *L.*; *E. B.* t. 886.

Woods in the S. and S.W. of England. ♄. 5—7. — This noble tree is much cultivated in plantations on account of its timber, of which Evelyn says, "It hath formerly built a good part of our ancient houses in the city of London," and that he had "one large barn near the city entirely framed of it." It affords excellent stakes for pallisades and props for vines and hops. It is good for mill-timber and for waterworks; but if water touch the root of the growing tree, it spoils both the fruit and wood. The nuts are used as an article of daily food in the S. of Europe, and in some parts of France they are served up for breakfast, boiled in milk.

3. Quércus *Linn.* Oak.

Barren fl. in a lax *catkin* or *spike*, without scales. *Perianth* single, 5—7-cleft. *Stamens* 5—10. *Anthers* 2-celled.—*Fertile fl.* aggregated or in a lax spike. *Involucre* 1-flowered, of many little scales united into a *cup*. *Perianth* single, closely investing the ovary, 6-toothed. *Ovary* 3—4-celled. *Style* short. *Stigmas* 3—4, oblong, compressed. *Nut* (or *acorn*) solitary, surrounded at the base by the enlarged cup-shaped indurated involucre.—Named, according to Lepelletier, from the Celtic *quer*, *beautiful*, and *cuez*, a *tree*, a term perhaps given to those few *Oaks* on which the Mistletoe was found; but the proper *Celtic* name was *derw;* hence *Darach*, Gaelic; δρυς, in Greek, and *Dryades*, as well as *Druids*.

1. Q. *Róbur* L. (*common British O.*); leaves deciduous oblong-obovate deeply sinuate their lobes obtuse, fruits aggregated in the axils of the uppermost leaves or along an axillary stalk, involucre 3—4 times shorter than the mature nut its scales oblong obtuse closely imbricate. — *α.* fruits 2—6 in a long-stalked spike. *E. B.* t. 1342. Q. pedunculata W. — *β.* fruits aggregated or on a rather shortly stalked spike. *E. B.* t. 1845. Q. Robur *W.* Q. intermedia *D. Don.*

Woods and hedges, not uncommon, particularly in the Highlands of Scotland. ♄. 4, 5. — We can corroborate Dr. Greville's observations on these two supposed species (*Trans. Bot. Soc. Ed.* i. p. 65. t. 4, 5.): there is no connection whatever between the relative length of the fruit-stalk and the petiole; thus, although the long-stalked form is described to have much the shortest petiole, we have specimens before us from Killin with the upper petiole fully ¾ inch long, while it is scarcely half an inch long in the usual form with aggregated fruits. The *flowers* are sessile upon the *peduncle* in both varieties; but in *β.* the peduncle is mostly very short, or almost wanting, in *α.* much elongated: between these there is every gradation: some specimens have no stalk whatever or a short one, the lowest fruit being usually at the base of the stalk; others exhibit this last and at the same time longer peduncles in which the lowest fruit

is at a little distance from the base; in others we have the lower fruits still more distant from the base but below the middle of the stalk, till in some the lowest fruit is above the middle. In one specimen from Glen Falloch the peduncle with young fruits is $7\frac{1}{2}$ inches long, the lowest fruit being 4 inches from the base, a strange contrast to the typical form of our *var.* β. but which is an extreme state, occurring, we believe, only at the extremity of the branches. *Q. intermedia* is said to have the lobes of the leaves separated by obtuse angles, and the *Q. Robur* and *Q. sessilifolia*, by acute angles; but both kinds may be observed on the same branch and sometimes on the same leaf. It is generally supposed that the wood of one of the kinds is better than that of the others; but it is not agreed which supposed species is the more valuable; and it is very doubtful if the superiority of the timber corresponds either with the length of its petioles or peduncles, or shape of the leaves. The word *Robur* is derived from *rove*, another Celtic word for the *oak;* whence arises *robur, strength*, in Latin.

4. Córylus *Linn.* Hasel-nut.

Barren flowers in a cylindrical *catkin;* its *scales* 3-cleft, middle lobe covering the two lateral ones. *Perianth* 0, except the two inner collateral scales of the catkin which cohere at their base to the outer one (or true scale). *Stam.* 3. *Anthers* 1-celled. —*Fertile fl.* 1—2 together within a minute involucre of 2—3 cohering lacerated hairy scales, the whole collected into a short gemmaceous bracteated *catkin*. *Perianth* closely investing the *ovary*, and scarcely distinguishable from it. *Stigmas* 2, filiform. *Nut* invested with the enlarged, united scales of the involucre, which are coriaceous at the base, and leafy and laciniate at the summit.—Named from κορυς, a *casque* or *cap;* the fruit, with its involucre, appearing as if covered with a bonnet.

1. C. *Avellána* L. (*common H.*); stipules oblong obtuse, leaves roundish-cordate pointed, involucre about the length of the fruit unarmed campanulate 2—3-partite rather spreading torn at the margin. *E. B.* t. 723.

Hedges and copses, abundant. ♄. 2—4.—The wood of hasel is employed for a number of domestic and agricultural purposes, and makes an excellent charcoal for drawing. The nuts are well known at our tables. The young forked twigs of this plant constitute the celebrated divining rod (*virgula divinatoria*). From the Anglo-Saxons we have derived our word *Hasel-nut*, which they called *Hasel-nutu*, from *Hasel* a *cap*, and *Knutu* a *nut*.

5. Cárpinus *Linn.* Hornbeam.

Barren fl. in a cylindrical *catkin*, its scales roundish. *Stam.* 5—12. *Anthers* 1-celled.—*Fertile fl.* in a lax *catkin;* its scales small, deciduous. *Involucre* of 2 distinct stalked leaves (*catkin-*

scales Linn.), 2-flowered, at length large and foliaceous. *Perianth* urceolate, toothed at the apex, incorporated with the 2-celled *ovary*, of which one cell is abortive. *Stigmas* 2. *Nuts* in pairs, one attached to the summit of the stalk of each leaf of the involucre, ovate, striated.—Named from *car*, *wood*, and *pin*, a *head*, in Celtic; it having been the wood employed to make the yokes of oxen. The English "*Hornbeam*" has the same signification.

1. C. *Bétulus* L. (*common H.*); leaves of the involucre of the fruit deeply 3-lobed, central lobe oblong at least 2—3 times longer than the lateral ones, serrate or entire, limb of the perianth with short somewhat ovate acute teeth, nut 7—11-striate. *E. B.* t. 2032.

In woods and hedges, in a meagre, damp, tenacious soil, forming a principal part of the ancient forests on the north and east sides of London. ♄. 5. — Rather a small *tree*, with ovate or subcordate doubly serrate acute *leaves*, of which the veins are somewhat hairy, and which are beautifully plaited when young. The *wood* of the Hornbeam is white, tough, and hard, and burns like a candle. It is used in turnery-work, for implements of husbandry, cogs of wheels, &c. The inner *bark* yields a yellow dye.

Ord. LXXXVII. CONIFERÆ *Juss.*
(including Taxineæ *Rich.*)

Monœcious or diœcious, without a perianth.—*Barren flowers* in a deciduous *catkin*; *scales* peltate or erect, shortly stalked or sessile, bearing near the base at the edge, or on the underside, 2 or more distinct *anther-cells* (2 or more monadelphous *stamens* each with a single 1-celled anther?).—*Fertile flowers* generally in many- or few-flowered *cones*, sometimes solitary. *Ovary*, in the cones, spread open, having the appearance of a dry or fleshy scale destitute of *style* or *stigma*, and arising from the axil of a membranous *bractea*; in the solitary flower sometimes apparently wanting or adhering to the ovule. *Ovules* naked, inverted or erect, with a large opening (*foramen*) at the summit. *Fruit* consisting either of a naked seed seated in a fleshy receptacle, or of a cone: the latter is formed of the scale-shaped ovaries which become enlarged and indurated or fleshy, and occasionally of the bracteas also, which are sometimes obliterated, and sometimes extend beyond the scales in the form of a lobed appendage. *Seeds* with a hard crustaceous integument. *Embryo* in the midst of fleshy and oily *albumen*, with 2 or more opposite *cotyledons*; the *radicle* next the apex of the seed, and having an organic connection with the albumen. —*Resinous* trees *or* shrubs, *of vast importance*, *inhabitants of*

various parts of the world. Wood *in concentric layers, destitute of the large dotted ducts (bothrenchyma) so obvious in the* Oak *and other* Dicotyledonous trees.[1] Leaves *linear, acerose or lanceolate, rigid, entire at the margins, or dilated and lobed, always with parallel veins, sometimes fascicled and sheathing at the base.* —From the *pine*, *Pinus*, we derive an immense quantity of useful *timber*, *turpentine*, *pitch*, &c.; *P. Larix* yields *Venetian Turpentine*; *P. Cedrus* is the *Cedar of Lebanon*. *Gum Sandarach* is supposed to be the product of *Thuya articulata*. The fruit of our common *Juniper* was formerly used to impart the peculiar flavour to gin. Cedar-pencils are not made of the real Cedar of Lebanon wood, but of an American *Juniper*, *J. Virginiana*.

1. Pinus. Fruit (dry) a many-flowered cone: scales closely imbricated, all dry. Seeds 2 on the inner face of each scale, crustaceous, winged at the end.
2. Juniperus. Fruit (drupaceous) a small roundish few-flowered cone: scales closely imbricated, lower ones dry, empty; 3 upper fleshy, enclosing 1—3 bony wingless seeds.
3. Taxus. Fruit (drupaceous) composed of a cup-shaped fleshy receptacle (with dry empty scales at its base), surrounding a single naked bony seed.

I. *Ovules inverted: foramen inferior. Pollen-grains oval, with darkly granular extremities and an intermediate transparent band; outer coat not ruptured readily by moisture.* Abietineæ *Br.*

1. Pínus *Linn.* Fir.

Monœcious.—*Barren fl.* in crowded racemose *catkins*; *scales* attached by the base, with 2 *anther-cells*.—*Fertile fl.* in an ovate or oblong many-flowered *cone*; its scales closely imbricated, dry, at length indurated; lowest ones empty, the others bearing two inverted *ovules* on the upper surface. *Seeds* 2 on each scale, crustaceous, terminated by a long winged appendage. —Name: *pin*, or *pen*, in Celtic means a *head*, or a prominent *crag*, or *mountain*, still so called in Wales (it is *Ben* in Scotland), where the *pine* delights to grow, "moored in the rifted rock." — From the great diversity of forms in this genus, attempts have been made to subdivide it; but the only certain characters for the new genera depend on the scales of the cones, and on the form, position, and perennial nature of the leaves: we therefore retain it entire.

[1] The cells or fibres (*pleurenchyma*) of which the wood is composed, not being accompanied by vessels or ducts, are so pressed together that a transverse section exhibits under the microscope a kind of network, with square meshes formed by *straight* lines crossing each other at *right angles*, without any circular openings. The woody cells or fibres are moreover furnished on their side with curious glandlike discs, observable when a thin longitudinal slice is taken parallel to the medullary rays, but not when at right angles to these.

1. P. *sylvéstris* L. (*Scotch F.*); leaves long and narrow rigid evergreen fascicled by pairs all round the branch, cones conic-ovate young ones stalked recurved as long as the leaves generally in pairs, scales with a small deciduous point below the summit where they are at length thickened, anther-scale shortly prolonged beyond the cells which open longitudinally. *E. B.* t. 2460.

Highlands of Scotland, where it constitutes vast natural forests. ♄. 5, 6. — A *tree* of great value, but only so when in a natural state and in a congenial soil: it yields the red or yellow deal. A plank from the largest tree that was cut down in the late Duke of Gordon's forests at Glen More near the base of Cairngorm, measured 5½ ft. in diameter; and we observed in the same forest many stumps fully 3 ft. across. The *bark* has been used with much success in tanning, and in the north of Europe is made into a wretched substitute for bread. Tar, pitch, and turpentine are the produce of this tree; and in the Highlands, the resinous roots, dug up in the bogs, afford a succedaneum for candles. Dr. Bromfield remarks that *P. sylvestris* and *P. Pinaster*, though not aborigines, are becoming established by spontaneous dissemination over the vast moorlands and bog-tracts of West Hants, and Dorset, which they seem disposed to convert into pine-woods similar to those in the Highlands of Scotland, the Landes of Bordeaux, or the pine-barrens of N. America.

II. *Ovules erect; foramen superior. Pollen-grains globose; the outer coat easily ruptured by moisture and cast off.* Cupressineæ *Br.*

2. Juníperus *Linn.* Juniper.

Mostly diœcious.—*Barren fl.* in minute *catkins; scales* subpeltate, with 4—8 *anther-cells* opening longitudinally.—*Fertile fl.* in a minute few-flowered cone; scales closely imbricated, lowest ones dry and empty, upper 3 bearing an erect *ovule* at their base on the upper surface. *Seeds* usually 3 (1—3), bony, wingless, enclosed within the 3 enlarged fleshy upper scales of the cone, resembling a *berry*.—Name: probably from the Celtic *uaine*, *green*, and *brior*, a *prickle*, on account of the evergreen prickly foliage.

1. J. *commúnis* L. (*common J.*); leaves 3 in a whorl linear mucronate spreading or imbricated longer than the berry. *E. B.* t. 1100. — β. *nana;* small, procumbent, leaves broader. *J.* nana *Willd.: E. B. S.* t. 2743.

Woods and heaths, frequent. — β. Abundant in the mountains of Wales, Scotland, and Ireland, and on low ground in the northern parts. ♄. 5. — A *shrub*, extremely variable in size, bearing numerous, linear, mucronate, and pungent *leaves*. *Flowers* axillary, small. The *berries*, which are bluish-black, used to form an important article

of commerce in Holland, where they were employed in the manufacture of Geneva, imparting to it that peculiar flavour which our distillers sometimes imitate by oil of turpentine. The wood is reddish, and serves for veneering.

3. TÁXUS *Linn.* Yew.

Diœcious.—*Barren fl.* in oval *catkins*, surrounded at the base with imbricated bracteas, of which the inner ones are larger; *scales* crowded, peltate, with 3—8 *anther-cells* on the lower surface.—*Fertile fl.* a solitary erect *ovule*, seated on a fleshy disk, with a few imbricated scales at the base. *Seed* solitary, bony, contained in an open fleshy cup-shaped receptacle, resembling a *drupe*.—Name: τοξον, a *bow*, because the wood was excellent for that purpose: τοξον also means an *arrow*; perhaps arrows were poisoned with the juice of its berries.

1. T. *baccáta* L. (common *Y.*); leaves 2-ranked crowded linear acute, flowers axillary sessile. *E. B.* t. 746.

Mountain woods. ♄. 3. — A low *tree*, with a *trunk* often of considerable diameter. The noble *Yew*, which still remains in Fortingal churchyard, at the entrance to Glen Lyon, measured, according to Pennant, 56½ feet in circumference. The *wood* is hard, beautifully veined, much valued for cabinet-makers' work, and was formerly still more highly prized for making bows, on which account it is said to have been planted extensively by our ancestors in churchyards. *Leaves* distichous, linear, persistent, deep green. *Drupes* red, esteemed poisonous. The *Irish*, or *Florence-court Yew*, now generally known in our gardens, has scattered *leaves*, and, as Dr. J. T. Mackay observes, a different habit from the common kind: it is *T. fastigiata* of Lindley, *T. baccata* β. Bab.: two of these were found among Juniper bushes on the mountains near Benoughlin (Lord Enniskillen's estate) about 80 or 100 years ago, by a tenant who brought one to Florence-court, planting the other in his own garden; from the tree brought to Florence-court all those now in existence originated: it is the pistillate plant, but it seems to bear fruit if a hedge of the staminate plants of the common kind be in the neighbourhood: the seeds, we understand, rarely yield the *Irish* form.

CLASS II.

MONOCOTYLEDONOUS [1], OR ENDOGENOUS FLOWERING, PLANTS.

Cellular and vascular. *Stem* (when perennial) not increasing by a succession of annual layers on the outside of the old ones, usually with no distinction of bark, wood, pith, or medullary rays, but consisting of cellular tissue, in which the vascular is inserted in confused bundles, or in a single ring, the newest formation being internal. *Leaves* mostly alternate below, often sheathing, permanent and withering on the stem, more rarely jointed and deciduous, with usually parallel nerves connected by simple transverse veins, rarely netted-veined. *Flowers* with a single *perianth* (or without one), the parts mostly arranged in a ternary manner, sometimes when in a double row the external one green and resembling a calyx. *Embryo* with one *cotyledon*, or if apparently 2 they are alternate. *Plumule* and *radicle* either within the cotyledon, or lodged in a cleft in its side, or attached to its flat face.

SUB-CLASS I. PETALOIDEÆ. (ORD. LXXXVIII.—CV.)

Flowers never glumaceous, sometimes naked or nearly so (as in Araceæ, Pistiaceæ, Naiadaceæ, *and* Juncaginaceæ), *generally with a more or less coloured perianth, the pieces of which are in a single or double whorl.*[2]

CONSPECTUS OF THE ORDERS.

I. *Ovary adnate with the tube of the perianth (inferior).*

* *Leaves with parallel nerves and simple transverse veins.*

89. ORCHIDACEÆ. Flowers perfect, gynandrous; stamens and style united.

[1] From *μονος*, one or single, and *κοτυληδων*, a *cotyledon*.

[2] Thus excluding the Grasses and Cyperaceous plants, where the stamens and pistil are covered by alternate imbricated *membranaceous* scales or bracteas, hence glumaceous.

88. HYDROCHARIDACEÆ. Stamens free from the style. Three outer segments of the perianth herbaceous.—Floating plants.
90. IRIDACEÆ. Flowers perfect. Stamens 3, free from the style; anthers extrorse. Perianth wholly petaloid.
91. AMARYLLIDACEÆ. Flowers perfect. Stamens 6, free from the style; anthers introrse. Perianth wholly petaloid.

** *Leaves with netted veins.*

92. DIOSCOREACEÆ. Stamens and pistils in separate flowers.

II. *Ovary superior, free, not adnate with the perianth.*

* *Flowers perfect, containing both stamens and pistils, and with a perianth.*

† *Carpels and styles consolidated. Anthers introrse.*

94. LILIACEÆ. Perianth petaloid, conspicuous. Flowers scattered.
103. ORONTIACEÆ. Perianth herbaceous and scale-like. Flowers on a spadix. Fruit baccate.
97. JUNCACEÆ. Perianth usually dry and scariose, sometimes herbaceous and petaloid, but becoming dry when withered. Flowers scattered. Fruit capsular.

†† *Carpels united or distinct. Styles distinct, or none and the stigmas distinct.*

‡ *Leaves reticulated with branching veins. Fruit succulent, many-seeded.*

93. TRILLIACEÆ. Leaves not articulated with the stem. Stem simple, 1-flowered. Flowers perfect. Outer 3 sepals or all herbaceous.[1]

‡‡ *Leaves with parallel longitudinal nerves, connected by simple transverse veins.*

95. MELANTHACEÆ. Anthers extrorse. Cells of ovary and fruit many-seeded.—Terrestrial plants.
98. BUTOMACEÆ. Anthers introrse. Cells of ovary and fruit many-seeded.—Water plants.
99. ALISMACEÆ. Perianth conspicuous, 3 inner segments highly developed and petaloid. Cells of ovary and fruit 1—2-seeded.—Water plants.
100. JUNCAGINACEÆ. Perianth inconspicuous; all the sepals similar, herbaceous or scarcely petaloid. Lower flowers stalked. Cells of ovary and fruit 1—2-seeded.—Marsh plants, but neither submerged nor floating.
105. NAIADACEÆ. Perianth inconspicuous; sepals all scale-like, cuneate at the base. Flowers all sessile, on a common peduncle; cells of ovary and fruit 1-seeded.—Submerged or floating plants.

** *Flowers imperfect (stamens and pistils in separate flowers) or without a perianth.*

105. NAIADACEÆ. Spadix thin or wanting. Spatha none or similar to

[1] In the true *Smilaceæ*, to which the *Sarsaparilla* belongs, the leaves are stalked and jointed with the stem, stem branched, many-flowered, flowers imperfect, sepals and petals 3, and the connectivum of the anthers is never prolonged beyond the cells. From these imperfect-flowered *Liliaceæ* they principally differ by the structure of the leaves.

the leaves. Perianth none or inconspicuous. Carpels 1—4.—Submerged or floating plants.

104. PISTIACEÆ. Spadix none. Flowers naked, 2 enclosed in a membranous spatha. Carpels solitary, 1-celled.—Floating plants.

101. TYPHACEÆ. Flowers crowded on a thick spadix, which is not enveloped by a spatha.

102. ARACEÆ. Flowers naked, crowded on a thick spadix enclosed within a spatha.

96. RESTIACEÆ. Spadix none. Flowers bracteated, capitate. Ovary 2—3-celled, with solitary ovules. Fruit dry, capsular, loculicidal.

94. LILIACEÆ. Spadix none. Flowers solitary (on the middle of the leaf). Ovary 3-celled; cells with several ovules. Fruit succulent, indehiscent.—Shrubs.

99. ALISMACEÆ. Spadix and spatha none. Flowers stalked. Perianth conspicuous, 3 inner sepals petaloid. Carpels numerous, 1-celled.

Div. I. *Ovary inferior, adnate with the tube of the perianth.* (ORD. LXXXVIII.—XCII.)

* *Leaves with nerves from the base to the point of the leaf, connected by simple transverse veins.* (ORD. LXXXVIII.—XCI.)

ORD. LXXXVIII. HYDROCHARIDACEÆ *Juss.*

Flowers perfect or imperfect, with a *spatha*. *Limb* of the *perianth* usually 6-parted; the 3 inner segments petaloid, rarely wanting; 3 outer herbaceous (very rarely petaloid?). *Stamens* free from the style. *Ovary* solitary, 1- (or spuriously 3—9-) celled; *placentas* parietal, sometimes projected into the axis and meeting there. *Style* 1 or none. *Stigmas* 3—9, entire or bifid. *Fruit* coriaceous or fleshy, indehiscent, 1—9-celled. *Albumen* 0. *Embryo* straight. *Radicle* pointing to the hilum.—Aquatics. Leaves *radical, with usually a sharply serrate margin, often floating, rarely rigid and submerged.* Flowers *whitish.*

1. ANACHARIS. Ovary 1-celled. Stigmas 3. Leaves verticillate.
2. HYDROCHARIS. Ovary 6-celled. Stigmas 6, cuneate, bifid. Flowers 6—9-androus.
3. STRATIOTES. Ovary 6-celled. Stigmas 6, linear, bifid. Flowers polyandrous.

1. ANÁCHARIS *Rich.* Anacharis.

Diœcious. *Spatha* tubular, bifid at the apex, nearly sessile, containing a single flower.—*Barren fl. Perianth* 6-partite. *Stam.* 9.—*Fertile fl. Tube* of the *perianth* filiform, elongated; *limb* 6-partite. *Sterile stamens* 3, subulate. *Style* filiform, cohering with the tube of the perianth. *Stigmas* 3. *Fruit* baccate, 1-celled, few-seeded.—Leaves *verticillate or opposite,*

sessile.—Name: *ανα*, *like*, and *χαρις*, an abbreviation of the name of the next genus.

1. A. **Alsinástrum* Bab. (*long-flowered A.*); leaves 3—4 in a verticil, linear- or oval-oblong minutely serrulate, spatha of the fertile flower many times longer than the ovary, stigmas ligulate. *Bab. in Ann. Nat. Hist. Ser.* 2. i. p. 83. t. 8. A Nuttallii *Planch.* Udora Canadensis *Nutt.*

Ponds, ditches, canals, and streams. Leigh Park, near Havant, Hants; reservoirs at Watford and Foxton Locks on the Junction canal, Leicestershire; River Leen, and adjoining meadows, near Nottingham; in the Trent and canal near Burton on Trent, Staffordshire. In the Whiteadder, Berwickshire, from Bluestaneford to Gainslaw (a distance of nearly 12 miles); Pond in the Edinburgh Botanic Garden (not planted there). Dublin. ♃. 7.—10.—Although we only give the above stations, being those in which it first attracted notice, this plant is very generally diffused. It is now generally acknowledged to be a purely American species, but the mode in which it arrived in this country remains as great a mystery as ever. All the stations in the centre of England may possibly be connected with each other, but cannot be with the Berwickshire one; the other localities are subject to suspicion. The *stigmas* are usually 3, although 2 were observed by Mr. Babington; Mr. Kirk finds 3, but only 2 sterile stamens; these are occasional aberrations, there being 3 of each, unless when an accidental abortion has taken place. The stigmas are only emarginate in the British plant, but have a longitudinal line indicating a tendency to be bifid after being fertilized. The sterile plant has not been observed in this country.

2. Hydrócharis *Linn.* Frog-bit.

Diœcious. — *Barren fl.* *Spatha* 2-leaved, shortly stalked, about 2—3-flowered. *Perianth* 6-partite. *Stam.* 6—12, in about 3 rows, connected at the base, surrounting 3 imperfect *styles.*—*Fertile fl.* on a long stalk, within the radical 1-leaved spatha. Tube of the *perianth* scarcely longer than the ovary; *limb* 6-cleft. Sterile *stamens* 6. *Stigmas* 6, oblong-cuneate, bifid, the segments divaricating. *Fruit* coriaceous, roundish, 6-celled, many-seeded.—Leaves *stalked*, *reniform.* — Named from *ὑδωρ*, *water*, and *χαρις*, *elegance*, being showy aquatic plants.

1. H. *Mórsus Ránæ* L. (*common Frog-bit.*) *E. B.* t. 808.

Ditches and ponds in England and Ireland. Not wild in Scotland. ♃. 7, 8.—Floating, and sending down long *radicles* from its horizontal *stems*. *Leaves* petioled, reniform, entire. *Flowers* subumbellate, large, white, delicate, arising from pellucid membranous *spathas*.

3. Stratiótes *Linn.* Water-Soldier.

Diœcious. *Spatha* 2-leaved, stalked.—*Barren fl.* numerous

in the *spatha*. *Perianth* 6-parted. *Stam.* 12—13, surrounded by 23—24 imperfect linear ligulate ones.—*Fertile fl.* solitary in each spatha. Tube of the *perianth* not longer than the ovary; *limb* 6-parted. Sterile *stamens* numerous. *Stigmas* 6, linear, bifid. *Fruit* baccate, 6-celled, many-seeded.—Leaves *sessile, radical, crowded, narrow.*—Name: στρατιωτης, a *soldier*, from στρατος, an *army*; on account of the numerous sword-like leaves.

1. S. *aloides* L. (*Water-Soldier*); leaves sword-shaped triangular aculeate-serrate. *E. B.* t. 379.

Lakes and ditches, particularly common in the fenny parts of Norfolk and Lincolnshire. Rare in the north: planted in the Lochs of Duddingston, Forfar, and Cluny, Scotland. 4. 7. — A singular plant, with numerous *radical leaves*, thrown up from creeping *runners*, which penetrate far into the mud. *Scape* 4—6 inches long, compressed, 2-edged. *Flowers* white, from a compressed 2-leaved *spatha*. The *flowers* are dicœcious, but sometimes the *stamens* on the fertile flower become perfect.

Ord. LXXXIX. ORCHIDACEÆ.

Perianth of 6 segments in 2 rows, mostly coloured; one, the lowest (so situated from the twisting of the ovary) usually differing in form from the rest and often spurred. *Stamens* 3, united with the style in a central column, the two lateral ones usually abortive, or sometimes the central one (in *Cypripedium*). *Anther* often deciduous, 2—4—8-celled. *Pollen* powdery or waxy, cohering in masses. *Ovary* 1-celled, with 3 parietal receptacles. *Style* forming part of the column with the *stamens*. *Stigma* a viscid space in front of the column. *Capsule* (rarely a *berry*) 3-valved. *Seeds* numerous; *testa* loose, reticulated. *Albumen* 0.—Herbaceous plants, *the terrestrial species* having often knob-like *roots*. *Many tropical species are epiphytes*. Flowers *generally handsome, in spikes or racemes.*—The knobs of several species afford *Salep*. The fragrant *Vanilla* is the seed-vessel of *Vanilla aromatica*.

I. *Anther* 1, *terminal*. *Pollen-masses smooth* (*not granular*): *pollen cohering firmly in a definite number of simple lobes, each of which is a pollen-mass, and finally waxy* (*or rarely pulverulent when bruised in water*).

1. Malaxis. Outer sepals widely spreading. Lip superior, quite entire and similar to the other inner sepals. Spur 0. Anther opening longitudinally. Pollen-masses 4, in a double row.
2. Liparis. Outer sepals widely spreading. Lip inferior, quite entire, larger than the other linear inner sepals. Spur 0. Anther opening longitudinally. Pollen-masses 4, in a single row.

3. Corallorhiza. Sepals converging. Lip inferior, with two small lobes at the base. Spur free or adnate to the ovary. Anther opening transversely. Pollen masses 4, oblique.

II. *Anther* 1, *attached to the back of the column, or subterminal. Pollen-masses granular; pollen in a lax state of cohesion, or combined into granules or masses* (*which are not waxy*) *elastically cohering. Lip inferior.*

4. Epipactis. Perianth connivent or spreading. Lip free from the column and not embracing it, much contracted or articulated in the middle; upper lobe entire at the apex, lower concave.

5. Listera. Lip linear or oblong, 2-lobed at the apex.

6. Neottia. Perianth ringent; the 2 lateral outer sepals erect, placed under and including the base of the lip, oblique at the base and more or less decurrent on the ovary. Lip beardless, canaliculate, embracing the column and cohering below with its produced base, with two callosities below the middle, entire at the apex.

7. Goodyera. Perianth ringent; the 2 lateral outer sepals spreading, placed under and including the gibbous base of the lip. Lip entire at the apex, free from the column, flat above and without callosities.

III. *Anther* 1, *placed on the summit of the column. Pollen-masses farinaceous, collected into small lobes or granules elastically cohering together. Lip superior.*

8. Epipogon. Perianth spreading. Ovary not twisted.

IV. *Anther* 1, *adnate to the face of the stigma. Pollen-masses granular: pollen cohering in an indefinite number of finally waxy granules or lobes, attached by an irregular elastic cellular tissue along the axis of the pollen-mass. Lip inferior.*

9. Orchis. Lip spurred. Glands of the stalks of the pollen-masses contained in a common little pouch.

10. Gymnadenia. Lip spurred. Anther-cells contiguous, parallel. Glands of the stalks of the pollen-masses naked, approximated.

11. Habenaria. Lip spurred. Anther-cells separated, diverging at the base. Glands of the stalks of the pollen-masses naked, distant.

12. Aceras. Lip without a spur. Glands of the stalks of the pollen-masses contained in a common little pouch.

13. Herminium. Lip without a spur. Glands of the stalks of the pollen-masses naked, distinct.

14. Ophrys. Lip without a spur. Glands of the stalks of the pollen-masses each in a distinct little pouch.

V. *Anthers* 2, *lateral, with a central one sterile and petaloid.*

15. Cypripedium. Lip large, inflated.

I. *Anther* 1. *Pollen cohering firmly in a definite number of simple smooth* (*not granular or pulverulent*) *lobes, each of which is a pollen-mass and finally becomes waxy* (*or rarely pulverulent when bruised in water.*)—Malaxideæ.

1. Malaxis *Sw.* Bog-Orchis.

Outer *sepals* widely spreading: the two lateral inner ones reflexed, smaller than the outer. *Lip* without a spur, very

small, superior, undivided. *Column* very short. *Anther* open ing longitudinally. *Pollen-masses* in 2 pairs, placed the on behind the other.—Name: μαλαξις, *a softening*, from μαλασσω to *soften*, on account of the tender nature of the plant.

1. M. *paludósa* Sw. (*Bog-Orchis*); leaves 4—5 oval ver concave papillose at the extremity [1], lip concave acute. *E. B* t. 72. Ophrys *L.*

Spongy bogs, in many places, but often overlooked on account o its small size. Frequent in the valleys of Clova. ♃. 7—9.— *Ste* 2—4 inches high. *Flowers* erect, minute, in a small greenish *spike* Outer *sepals* ovate, one of them recurved, the other two erect and wit their bases embracing the base of the *lip*, which is thus also erect: th two lateral *inner* ones recurved.

2. Líparis *Rich.* Liparis.

Perianth spreading, uniform, with linear segments. *Lip* in ferior, undivided, reflexed. *Column* elongated. *Pollen-masse* in 2 pairs in a single row.—Named from λιπαρος, *fat*, or unctu ous to the touch.

1. L. *Loesélii* Rich. (*two-leaved Liparis*); leaves 2 broadl lanceolate, scape trigonal, lip entire longer than the unequa leaves of the perianth. Malaxis *Sw.* Ophrys *L.*: *E. B.* t. 47 Sturmia Loeselii *Reich.*

Sandy bogs, in Norfolk, Suffolk, and Cambridgeshire. ♃. 7.— *Stem* 6—8 inches high. *Flowers* few, in a lax *spike*, yellowish-green their general structure is very similar to the tropical and parasitica *L. foliosa*, Bot. Mag. t. 2709.

3. Corallorhíza *Hall.* Coral-root.

Sepals converging. *Lip* inferior, produced at the base; its *spu* adnate with the ovary, or free. *Column* free. *Anther* opening transversely, 2-lipped. *Pollen-masses* 4, oblique, not parallel.— —Name: κοραλλιον, *coral*, and ριζα, a *root;* from the curiou structure of the root.

1. C. *innáta* Br. (*spurless C.*); spur very short adnate Ophrys Corallorhiza *L.*: *E. B.* t. 1547.

Marshy woods, and more rarely in sand, in several parts o Scotland. ♃. 7. — *Root* of thick, interwoven, fleshy fibres. *Ste* 6—12 inches high, greenish-white, with 2—3 lanceolate, acute sheathing *scales*, rather than *leaves*. *Flowers* 6—8, in a short la *spike*, pale yellowish-green. *Outer sepals* linear-lanceolate, keeled

[1] These papillæ the Rev. Professor Henslow has clearly ascertained to be litt bulbous *gemmæ*, and has described and figured them as such in the *Mag. of Na Hist.* vol. i. p. 442.; a fact suspected previously by ourselves in 1819, and in 1824 b Mr. W. Wilson, who further finds an *hybernaculum* formed in the autumn amon the decayed leaves. Thus, independent of *seeds*, this curious little plant has on mode of perpetuating itself, and another of increase.

2 lateral *inner* ones shorter, erecto-connivent. *Lip* oblong, white, nearly entire, waved at the margin, with a few purple blotches, deflexed. *Column* elongated.—This genus holds a middle place between this section and the next. Mr. Brown considers the pollen-masses to be truly pulverulent. Dr. Lindley asserts that although less waxy than in the preceding genera, they are really so, and only show a pulverulent structure when bruised among water.

II. *Anther* 1, *attached to the back of the column, or subterminal. Pollen-masses granular; pollen in a very lax state of cohesion* (farinaceous), *or combined into lobes* (*but not waxy*) *elastically cohering* (sectile).—NEOTTEÆ.

4. EPIPÁCTIS *Br.* Helleborine.

Lip free from the *column*, much contracted or articulated in the middle: lower lobe very concave, upper one entire at the apex. *Pollen* farinaceous.—Name given to some kind of *Hellebore* by the Greeks.

* *Upper segment of the lip with two projecting tubercles or plates at its base above. Column short. Anther sessile. Ovary straight, on a twisted stalk.*

1. E. *latifólia* Sw. (*broad-leaved H.*); leaves oblong or ovate many-nerved, upper ones narrower, raceme elongated many-flowered, lower bracteas longer than the flowers, upper lobe of the lip broadly ovate or deltoid acute somewhat cordate at the base broadest below the middle with 2 tubercles at the base as long as or a little shorter than the sepals nearly quite entire.—*α.* leaves broadly ovate upper ones ovate-oblong, upper lobe of the lip roundish broader than long shorter than the broadly ovate sepals. Serapias *E. B.* t. 269.—*β.* leaves ovate-oblong, upper ones lanceolate, upper lobe of the lip reniform broader than long as long as the ovate acute sepals. E. ovalis *Bab.: E. B. S.* t. 2884.—*γ.* leaves ovate-oblong, upper ones lanceolate, upper lobe of the lip triangular longer than broad shorter than the ovate-lanceolate sepals (bracteas mostly all longer than the flowers). E. purpurata *Sm.: E. B. S.* t. 2275.—*δ.* leaves ovate-oblong, upper ones lanceolate, upper lobe of the lip triangular longer than broad as long as the lanceolate sepals. E. media *Fries: Bab. Man.*

Woods in mountainous countries, not unfrequent.—*β.* Gigglesswick and other places on the sides of mountains near Settle, Yorkshire; also in Herefordshire.—*γ.* Woburn Abbey; Reigate, Surrey; Crawley, Sussex.—*δ.* Salop, Matlock; Abberly, Warwickshire. 2l. 7, 8.—*Root* creeping, with long fibres. *Stem* 1—3 ft. high; lower *leaves* varying much in breadth, the upper ones always narrower. *Flowers* in a very long lax *raceme*, greenish-purple, varying

much in intensity, sometimes nearly green, sometimes all dark purpl We can perceive no essential difference in these *varieties*, betwe which there are intermediate forms: the shape and size of the li although variable, as well as its structure, distinguish this species fro the next, which are the only two European ones of this section we a able to recognise.

2. E. *palústris* Sw. (*Marsh H.*); leaves lanceolate, bracte mostly shorter than the slightly drooping flowers, upper lob of the lip roundish-oval or obovate broadest at or above th middle undulate-crenate very obtuse or retuse with two cres at the base longer than the sepals. Serapias *Scop.*: *E. B.* 270. S. longifolia *L.*

Moist and marshy places, especially in the vicinity of chalk. ♃ 7. — *Stem* 1 foot high, purplish above. *Outer sepals* purple-gree inner ones and *lip* white, with rose-coloured streaks at the base.

** *Upper lobe of the lip naked, recurved. Column elongated. Anth on a short thick stalk. Ovary sessile, twisted.* Cephalanthera *Rich.*

3. E. *grandiflóra* Sm. (*large white H.*); leaves ovate-lance late sessile, bracteas longer than the glabrous ovary, sepa erect obtuse, upper lobe of the lip very blunt or rounde shorter than the rest of the perianth. E. pallens *Sw.* Serapia *L.*: *E. B.* t. 271. Cephalanthera *Bab.*

Woods and thickets, chiefly in a chalky soil. ♃. 5, 6. — *Ste* a foot or more high. *Flowers* remote, racemose, quite erect; *sepa* all nearly equal, large, oblong-ovate, obtuse, cream-coloured, concav including the small *lip* which is also white, but yellowish within Dr. Lindley ascribes to this and the following species a truly termina anther, and therefore places them in the group *Arethuseæ.*

4. E. *ensifólia* Sw. (*narrow-leaved white H.*); leaves lance late much acuminate subdistichous, bracteas subulate muc shorter than the glabrous ovary, sepals erect, outer ones sub acuminate inner acute, upper lobe of the lip roundish somewha obtuse or slightly pointed shorter than the rest of the perianth Serapias *L.*: *E. B.* t. 494. Cephalanthera *Rich.*

Mountainous woods, but not general. ♃. 5, 6. — *Flowers* approx mate, subspicate, more or less diverging, pure white.

5. E. *rúbra* Sw. (*purple H.*); leaves lanceolate, bracte longer than the downy germen, perianth spreading, upper lob of the lip acuminate as long as the inner sepals marked wit raised wavy lines. Serapias *L.*: *E. B.* t. 437. Cephalanthe *Rich.*

Very rare in mountainous woods, in England. Bank sloping to t south on Hampton Common. Gloucestershire. ♃. 6, 7. — *Sepa* purplish-red. *Lip* almost white.

5. Lístera *Br.* Bird's-nest or Twayblade

Lip 2-lobed at the apex. *Column* wingless. *Anther* fixed by its base. *Pollen* farinaceous *Br.* — Named in honour of *Dr. Martin Lister*, an eminent British naturalist.

* *Column very short. Stem with leaves.*

1. L. *ováta* Br. (*common T.*); stem with only 2 ovate-elliptical opposite leaves, column of fructification with a crest in which the anther is placed. Ophrys *L.: E. B.* t. 1548.

Woods and moist pastures, frequent. ♃. 5—7. — *Stem* 1 foot high. *Leaves* striate. *Flowers* distant upon the *spike*, yellowish-green. *Outer sepals* ovate; two lateral *inner* ones linear-oblong; *lip* long, bifid, without any teeth at the base. *Bracteas* very short.

2. L. *cordáta* Br. (*Heart-leaved T.*); stem with only 2 cordate opposite leaves, column without any crest, lip with a tooth on each side at the base. Ophrys *L.: E. B.* t. 358.

Sides of mountains in heathy spots, in the north of England and Scotland. ♃. 6—8. — *Roots* a few long fleshy fibres. *Stems* 3—5 inches high. *Flowers* few, very small, spiked, greenish-brown. *Sepals* somewhat spreading, *outer* ones ovate, lateral *inner* ones linear-oblong, *lip* pendent, linear.

** *Column elongated. Stem with scales, without leaves.*

3. L. *Nídus-A'vis* Hook. (*common B.*); stem with sheathing scales leafless, column without any crest, lip linear-oblong with 2 spreading lobes, toothless at the base. Ophrys *L.: E. B.* t. 48. Neottia *L.: Rich.*

Shady woods in many parts of England and Scotland. ♃. 5, 6. — *Root* of many, short, thick, densely aggregated, fleshy fibres. *Stem* 1 foot high. *Flowers* spiked, of a dingy brown. *Outer* and lateral *inner sepals* oblong-oval, nearly equal. Lobes of the *lip* spreading. — Dr. Lindley has shown that this can scarcely be generically distinguished from the group having leaves. It is the original *Neottia* of Dodonæus; Linnæus in 1740 adopted the genus, uniting with it *N. æstivalis*, but afterwards removed it to *Ophrys*. The unemployed name was then chosen by Jacquin, when he separated *N. æstivalis* and its more immediate allies: there cannot however be a doubt but that had Jacquin's name not now been sanctioned by Swartz, Willdenow, Smith and Brown, the appellation ought to be given to *Listera*, or to that which contains the *Nidus-Avis*, the only one having the *neottious* root.

6. Neóttia *Jacq.* Lady's Tresses.

Perianth ringent: the 2 lateral outer *sepals* erect, placed under and including the base of the lip, oblique at the base and

more or less decurrent on the ovary. *Lip* beardless, campanulate, embracing the wingless *column* and cohering below with its produced base, with 2 callosities below the middle, entire at the apex. *Pollen* farinaceous.—Flowers *in a spirally twisted spike.*—Named from νεοττια, a *bird's nest* (See *Listera Nidus-avis*). It is the genus *Spiranthes* of Richard.

1. N. *spirális* Rich. (*fragrant L.*); root-leaves oblong subpetiolate, spike unilateral, lip oblong. Ophrys *L.: E. B.* t. 541. Spiranthes autumnalis *Rich.*

Dry hilly pastures in various parts of England in a chalky or gravelly soil. ♃. 8, 9. — *Knobs* 3—4, oblong. *Stem* 4—6 inches high, rather bracteated than leafy. *Flowers* singularly spiral on the stalk, greenish white. Upper *outer* and 2 lateral *inner sepals* combined. *Lip* longer than the rest of the flower, oblong, broader and crenate at the apex. *Stigma* and *anther* both acuminate.

2. N. *æstivális* L. (*Summer L.*); knobs cylindrical long, radical leaves oblong-lanceolate, cauline narrow-lanceolate, spike lax. *Bab. in E. B. S.* t. 2817. Spiranthes æstivalis *Rich.*

Bogs and marshes. Between Lyndhurst and Christchurch in the New Forest, Hants. St. Ouen's Pond, Jersey. ♃. 7, 8.

3. N. *cérnua* Willd. (*drooping L.*); knobs long cylindrical, radical leaves linear lanceolate, cauline ones triangular lanceolate, bracteas glabrous shorter than the flower, spike dense 3-ranked, sepals equal obtuse cohering together, lip oblong slightly constricted in the middle upper segment obtuse crenulate. *Bab.* N. gemmipara *Sm.: E. B. S.* t. 2786 (bad). Spiranthes cernua *Rich.: Bab. in Linn. Soc. Trans.* xix. p. 262. t. 32.

Dunbog, Bear-Haven, Co. Cork, Ireland. ♃. 8, 9.— Stouter and shorter than our American specimens, but perhaps not a distinct species. The reader will find a full account of it by Mr. Babington, in the Linnean Transactions above referred to.

7. Goodyera *Br.* Goodyera.

Perianth ringent: the 2 lateral outer *sepals* placed under and including the gibbous base of the lip. *Lip* entire at the apex, free from the *column*, flat above and without callosities. *Pollen-masses* sectile. Pollen angled. — Named in compliment to *Mr. John Goodyer*, a Hampshire botanist of the time of Gerarde.

1. G. *répens* Br. (*creeping G.*); lower leaves ovate petiolate, sepals and lip ovate-lanceolate, root creeping. Satyrium *L.: E. B.* t. 289.

Old fir forests in the north, and especially the N. Highlands of

Scotland, near Fullarton House, Ayrshire. 2. 8.— *Leaves* nearly radical. *Stem* a span high, bearing bracteiform leaves. *Flowers* small, white. *Column* very short. *Pollen-masses* broadly oval, composed of large granules.

III. *Anther* 1, *attached to the apex of the column. Pollen-masses granular: pollen in a lax state of cohesion* (farinaceous), *or collected into small granules or lobes* (not waxy), *elastically cohering* (sectile). ARETHUSEÆ.

8. EPIPÓGON *Gmel.* Epipogon.

Perianth resupinate. *Sepals* nearly equal, spreading. *Lip* superior, 3-lobed, with an inflated short *spur*. *Column* with the *stigma* at the base in front. *Pollen-masses* 2, sectile, stalked: the stalks attached to a triangular *gland*. *Ovary* straight (not twisted). — Name: ἐπι, *upon* (or *uppermost*), and πωγων, a *beard*, an appellation given by Gmelin, because the *lip* (called by him the *beard*), is uppermost.

1. E. *Gmelini Ledeb.* (*Gmelin's E.*) *Ledeb. Fl. Ross.* iv. p. 77. *Hook. in Bot. Mag.* t. 4821. Satyrium Epipogium *L.*

Stiff wet soil. Foot of a steep woody bank, close to a brook, Tedstone Delamere, Herefordshire: *Mrs. Anderton Smith.* 2. 9.— This plant is reckoned very rare on the continent, though, perhaps, often overlooked on account of its leafless character and pale colour. The root consists of thick branching fleshy fibres, and resembles that of *Corallorhiza*, but the structure of the flowers is very different. It is probably epiphytal. *Scape* simple, sheathed with scales, turnid and jointed near the base. *Flowers* racemose, yellowish-white, partially streaked with red. *Sepals* nearly equal. Lateral *lobes* of the *lip* small, patent; terminal one large, entire, concave, studded with raised points in lines, furnished at the base with an inflated and ascending *spur*. *Column* short, bearing the large stigma in front. *Anther* sunk in a cavity at the top of the column, 2-celled; cells opening longitudinally.

IV. *Anther* 1, *adnate to the face of the stigma. Pollen-masses granular: pollen cohering in an indefinite number of fleshy waxy granules or lobes, attached by an irregular cloven cellular tissue along the axis of the pollen-mass* (sectile). ORCHIDEÆ.

9. ORCHIS *Linn.* Orchis.

Lip entire. *Glands* of the stalks of the *pollen-masses* contained in a common little pouch. — Name: ορχις, an ancient appellation of plants with a double tuberous root.

* *Stalks of the pollen-masses each with a distinct gland.*

† *Knobs*[1] *of the root 2, undivided.*

‡ *Bracteas 1-nerved.*

1. O. *Mório* L. (*green-winged Meadow O.*); lip 3-lobed somewhat crenate the middle lobe emarginate, sepals obtus ascending connivent, spur ascending blunt rather shorter tha the germen. *E. B.* t. 2059.

Meadows and pastures in England. 4. 6. — *Stem* from 1 span t 1 foot high. *Flowers* few, in a lax *spike*. *Outer sepals* purplish green forming a sort of helmet over the rest of the flower. *Lip* purple pale in the middle, with purple spots.

2. O. *máscula* (*early purple O.*); lip 3-lobed somewhat cre nate the middle lobe emarginate, outer sepals acute, the two lateral ones reflexed upwards, lateral inner sepals converging spur obtuse rather longer than the germen. *E. B.* t. 631.

Woods and pastures, frequent. 4 4—6. — *Stem* 1 foot high *Leaves* generally marked with dark purple spots. *Flowers* in a lax oblong *spike*, purple, sometimes fragrant; the centre of the *lip* i whitish at the base and spotted, sometimes altogether white. A plan found by Mr. Moore in Co. Wicklow, Ireland, is referred by some to *O. mascula;* by others to *O. speciosa* Host (which, however seems only a form of *O. mascula* with attenuated sepals); the leaves are invariably without spots: we have seen no specimens.

3. O. *ustuláta* L. (*dwarf dark-winged O.*); lip 3-partite marked with discoloured raised spots, segments narrow the middle one bifid, outer sepals connivent acute including the two lateral inner ones, spur nearly half as long, and bracteas as long, as the germen. *E. B.* t. 18.

Dry chalky pastures, in England. 4. 5, 6. — *Stem* 4—5 inches high. *Lip* white, with purple, raised, not rough spots, while the rest of the flower is a dark, dingy purple. *Outer sepals* forming a sharp helmet-like covering, within which are the two small linear lateral *inner* ones. *Leaves* lanceolate, acute.

4. O. *fúsca* Jacq. (*great brown-winged O.*); lip deeply 3-lobed with raised rough dark points, lateral lobes linear-oblong intermediate one large obcordate crenate and emarginate with a point in the sinus, outer sepals rather obtuse connivent including the two inner ones, spur obtuse about half as long as the germen. O. militaris *E. B.* t. 16.

Chalky pastures and borders of woods, in Kent. 4. 5. — *Stem* 1—2 feet high. *Leaves* ovate-oblong, obtuse. *Flowers* forming a

[1] *Knobs* or *tubercles* are simple roots which become succulent. In this Order they are often called *tubers*, by mistake; for a true *tuber* is not a root, but "a roundish underground succulent stem covered with buds (or eyes), from which new plants or tubers are produced, — as the Potato." *Lindl.*

handsome *spike*, with variegated purple *inner sepals;* the *outer* ones of a dark greenish-purple, the *lip* much paler.

5. O. *militáris* L. (*Military O.*); lip deeply 3-lobed with small raised rough points, the two lateral lobes linear-oblong several-veined short, middle lobe dilated at the extremity and deeply emarginate with an intermediate point, outer sepals acuminate connivent including the 2 lateral inner ones, spur obtuse about half as long as the germen, bracteas very short. *Bicheno in E. B. S.* t. 2675.

Chalky hills, principally about Reading, on both sides of the Thames. 4. 5. — Intermediate, in the construction of its *flowers*, between the preceding and the following, but most allied to the former. *Outer sepals* pale ash-coloured. *Lip* deep purple, white in the middle. *Leaves* oblong, rather acute.

6. O. *tephrosánthos* Vill. (*Monkey O.*); lip 3-partite with small raised rough points the two lateral lobes linear 1-veined, intermediate one deeply bifid with a point in the sinus, outer sepals acuminate connivent including the two lateral inner ones, spur half as long as the germen, bracteas very small. O. macra *Lindl.* O. militaris β. *E. B.* t. 1873?

Chalky hills, in Berks, Oxfordshire and Kent. 4. 5. — This beautiful and curious sp. Dr. Lindley pronounces to be quite distinct from *O. tephrosanthos*, with which it had been confounded; but Mr. Borrer not only doubts its being so, but whether it be even distinct from *O. militaris*, from which it chiefly differs by the narrower and less veined lateral lobes of the *lip*. *Flowers* pale purple, spotted. Segments of the *lip* narrow, deep purple. Among specimens communicated by Mr. Bicheno, were some monstrous flowers, each having 2 opposite horizontal *lips*, 2 *spurs*, and only 2 opposite *outer sepals*.

‡‡ *Bracteas with 3 or more nerves.*

7. O. *laxiflóra* Lam. (*lax-flowered O.*); lip 3-lobed the lateral lobes rounded in front crenulate longer than the truncate slightly emarginate intermediate one, spur cylindrical emarginate much shorter than the germen, lateral outer sepals reflexed, middle one erect, lateral inner ones connivent. *Bab. in E. B. S.* t. 2828.

Wet meadows, Jersey and Guernsey: *Mr. Babington.* 4. 5, 6. — "Allied to *O. Morio*, but that plant has single-nerved bracteas, and all the segments of its perianth, except the lip, are connivent. The short spur is also a valuable distinctive character." *Bab.*

†† *Knobs 2, palmate. Bracteas with 3 or more nerves.*

8. O. *latifólia* L. (*Marsh O.*); lip indistinctly 3-lobed its sides slightly reflexed crenate, outer sepals patent, 2 lateral inner ones connivent, spur cylindrical shorter than the germen, bracteas as long as or longer than the flower. *E. B.* t. 2308.

Marshes and moist meadows, common. ♃. 6, 7. — *Stem* usually hollow. *Flowers* varying from pale rose-colour to deep purple, the *lip* dotted and marked with purple lines; *white* on the sands of Barrie near Dundee. The species is known by its slightly lobed *lip*, its broad nearly erect and acuminate *leaves*, and by the *bracteas*, which are leafy and longer than the *germen*.

9. O. *maculáta* L. (*spotted palmate O.*); lip plane 3-lobed sometimes obscurely so, outer sepals spreading, 2 lateral inner ones connivent, spur cylindrical shorter, and bracteas usually not longer than the ovary. *E. B.* t. 632.

Pastures and heaths, frequent. ♃. 6, 7. — A foot high, slender *Stem* usually solid. *Leaves* distant, spotted with purple. *Flowers* white or pale purple, more or less spotted or streaked, especially the *lip*. Its generally deeply lobed *lip*, having the lateral lobes rounded central one rather the longest and ovate, together with the usually small subulate *bracteas*, constitute the chief marks of distinction between the usual form of this and *O. latifolia*. But the *bracteas* certainly do vary much in length, although they are seldom so long and leafy as in the last species. We must depend, then, either solely on the lip, or on the bracteas, as a distinguishing character, the one not always corresponding with the other, or unite the two species. We doubt if they be distinct; a doubt in which we understand Mr. Borrer joins.

** *Stalks of the pollen-masses connected by a common gland. Knob undivided.*

† *Lip erect in æstivation.*

10. O. *pyramidális* L. (*pyramidal O.*); lip with 3 equal entire lobes and 2 protuberances at the base above, lobes oblong-truncate, middle lobe sometimes emarginate, outer sepals spreading acuminate, spur subulate-filiform longer than the germen, bracteas 3-nerved. *E. B.* t. 110. — Anacamptis *Rich.*

Pastures and waste ground, England, chiefly in a chalky or clayey soil. Mull of Galloway (in a sand-bank), Isle of Colonsay, and Fifeshire, Scotland. ♃. 6—8.—*Leaves* very acuminate. *Flowers* of a delicate rose-purple, sometimes white, spirally arranged in a close broad, and ovate *spike*.

†† *Lip spirally twisted in æstivation.*

11. O. *hircína* Scop. (*Lizard O.*); lip 3-partite waved at the base downy, segments linear, intermediate one twisted very long, outer sepals connivent including the small lateral linear ones, spur very short. Satyrium L.: *E. B.* t. 24. Loroglossum *Rich.* Himantoglossum *Spr.*

Chalk-hills and bushy places, in Kent, Surrey, and Suffolk; very rare. ♃. 7. — A most remarkable plant, which cannot be confounded with any other. The smell of its *flowers* is detestable, and similar to that of a *goat*, whence its Latin specific name. *Lip* purple

towards the extremity, white and spotted towards the base; middle segment narrow, and more than an inch long.

10. Gymnadénia *Br.* Gymnadenia.

Lip spurred. *Anther-cells* contiguous. *Glands* of the stalks of the *pollen-masses* naked, approximate. — Named from γυμνος, *naked*, and αδην, a *gland*; one of the essential characters of this genus.

1. G. *conópsea* Br. (*fragrant G.*). Orchis *L.*: *E. B.* t. 10.

Dry pastures and heaths, in mountainous or hilly countries, especially in Scotland, most abundant, scenting the atmosphere with its fragrance. 4. 6—8. — *Stem* 1 foot high. *Knobs of the root* palmate. *Leaves* linear-lanceolate, keeled. *Flowers* in an ovate-oblong, rather dense *spike*, rose-purple. *Lip* 3-lobed, not spotted, the lobes equal, entire, rounded: the 2 lateral *outer sepals* spreading, their margins revolute; 2 lateral *inner* ones connivent. *Spur* filiform, twice as long as the *germen*. The 2 *cells* of the *anthers* are perforated at the base, through which the naked, large, and oblong *glands* of the *stalks* of the *pollen-masses* appear. — This genus is near the following in character, but it differs in habit.

11. Habenária *Br.* Habenaria. Butterfly-orchis.

Lip spurred. *Anther-cells* separated, diverging at the base. *Glands* of the stalks of the *pollen-masses* naked, distant. — Named from *habena*, a *thong* or *strap*, which the lip sometimes resembles.

* *Spur very short.* Peristylus *Lindl.*

1. H. *víridis* Br. (*green H.*); spur very short 2-lobed, lip linear bifid with an intermediate tooth, anther-cells without any process between their bases, bracteas much longer than the flowers, knobs palmate. Satyrium *L.*: *E. B.* t. 94.

Dry hilly pastures, not unfrequent. 4. 6—8. — *Stem* 6—8 inches high; lower *leaves* nearly ovate, obtuse; *outer* and lateral *inner sepals* connivent and forming a helmet, green. *Lip* small, greenish-brown.

2. H. *álbida* Br. (*small white H.*); spur obtuse much shorter than the germen, lip 3-cleft the segments acute, middle one the longest, anther-cells with a rostellate process between their bases, sepals all nearly equal ovate concave. Satyrium *L.*: *E. B.* t. 505. Gymnadenia albida *Rich.*

Mountain-pastures, not unfrequent. 4. 6—8. — About a span high. *Leaves* oblong, striate, lower ones obtuse. *Flowers* white, small, fragrant. *Lip* scarcely longer than the other *sepals*, deflexed.

** *Spur filiform, elongated.* Platanthera *Lindl.*

3. H. *bifólia* Br. (*lesser B.*); inner sepals connivent obtuse,

spur twice as long as the germen, lip linear entire obtuse anther oblong-truncate, its cells parallel. *E. B. S.* t. 2806 Orchis *L.* Platanthera *Lindl.*

Moist copses, meadows, and marshes, frequent. ♃. 6—8.—Radical *leaves* usually 2, oblong-obovate, and attenuate at the base both in this species and the next; cauline ones small, lanceolate.

4. H. *chlorántha* Bab. (*great B.*); inner sepals connivent obtuse, spur twice as long as the germen, lip lanceolate entire obtuse, anther broadly ovate truncate, its cells converging upwards twice as widely separated at the base as at the apex Platanthera *Lindl.* Orchis bifolia *E. B.* t. 22.

Dry pastures and heaths, sometimes in moist places, frequent. ♃. 6—8.—A monstrosity sometimes is found at Norris Castle, Isle of Wight, in which the spur is absent. Although we have admitted this as a species, we are not convinced that it is essentially distinct from the preceding. The two agree precisely in general appearance, and in every character save one, which in that case would require to indicate a different structure before it be held sufficient; the difference consisting merely in the anther of *H. chlorantha* being more dilated at the base, which may possibly be the effect of luxuriance. We admit it, however, because *H. bifolia* is itself in the same way intermediate between *H. chlorantha* and the genus *Gymnadenia.*

12. A'CERAS *Br.* Man-Orchis.

Lip without a spur. *Glands* of the stalks of the *pollen-masses* contained in a common little pouch.—Name, *α*, *without*, and *κερας*, a *horn*; in allusion to the absence of a spur.

1. A. *anthropóphora* Br. (*green M.*); lip longer than the germen. Ophrys *L.*: *E. B.* t. 29.

Dry chalky or clayey pastures in Surrey, Kent, Norfolk, and Suffolk; Hildersham, Cambridgeshire. ♃. 6.—*Knobs* ovate. *Stem* about a foot high. *Flowers* in a long *spike*. *Lip* tripartite, with linear segments, yellowish, with a red or brown margin, the middle lobe rather broad, deeply bifid. *Helmet* green, composed of the 3 connivent, concave *outer sepals*, including the 2 small, linear-lanceolate obtuse, lateral *inner* ones.

13. HERMÍNIUM *Br.* Musk-Orchis.

Lip without a spur. *Glands* of the stalks of the *pollen-masses* naked, distinct.—Name, probably derived from *ἑρμιν*, *ἑρμινος* the *knob* or *foot* of a *bed-post*, in allusion to the root.

1. H. *Monórchis* Br. (*green M.*); radical leaves 2 lanceolate Ophrys *L.*: *E. B.* t. 71.

Chalky pastures, principally in the east and south-east of England. ♃. 6, 7.—*Knobs* 2, very unequal. *Plant* 4—6 inches high, slender

with two lanceolate-oblong *leaves* at the base, and a small one on the *stem* or *scape*. *Flowers* small green. *Perianth* bent down from the top of the erect *germen*. *Outer sepals* equal, ovate, shorter than the inner ones; lateral *inner* ones ovate, acuminate, undivided: lower or *lip* 3-fid; the two side-lobes rather small; intermediate one much longer, linear. *Pollen-mass* on a short foot-stalk, with a large white gland.

14. O'PHRYS *Linn.* Ophrys.

Lip without a spur. *Glands* of the stalks of the *pollen-masses* each in a distinct little pouch. — Name: *ὀφρυς*, the *eyebrow*, which Pliny says this plant was used to blacken. The flowers of all the species are beautiful and curious, and more or less aptly resemble certain insects.

1. O. *apífera* Huds. (*Bee O.*); lip tumid trifid, the intermediate lobe recurved at the margin emarginate with a long subulate reflexed appendage in the notch, anther elongated with a hooked point, inner sepals oblong bluntish downy. *E. B.* t. 383. O. insectifera *c. L.*

Chalky and clayey soils in various parts of England, in pastures and pits. ♄. 6, 7. — *Flowers* large. *Outer sepals* purplish or greenish-white, lateral *inner* ones oblong, very small, of the same colour. *Lip* velvety or silky, rich brown variegated with yellow.

2. O. *arachnítes* Willd. (*late Spider O.*); lip longer than the sepals dilated somewhat tumid with 4 shallow marginal lobes and a terminal flattened somewhat heart-shaped straight or ascending appendage, outer sepals coloured, inner ones deltoid downy, anther with a straight or hooked point. *E. B. S.* t. 2596.

Chalky downs of South Kent, between Folkstone and Sittingbourne. 4. 5, 6. — The Rev. G. E. Smith speaks of this as allied to *O. apifera*, with which, and probably *O. fucifera*, it forms frequent hybrids. The essential distinctions are to be sought in the position of the appendage at the extremity of the lower *lip*, which is straight (and never recurved); in the more or less deltoid form of the purplish or green *inner sepals*; in the more bent and short, as well as paler, *outer* ones; and in the proportion borne to them by the *lip*, which is either equal or longer, and which presents in the true plant a nearly entire margin, and a more obvious shade of green in the various lines and spots upon its dull or intensely brown disk.

3. O. *uranífera* Huds. (*Spider O.*); lip tumid clothed with short dense hairs emarginate entire or obscurely lobed, middle lobe large without an appendage or with a mere gland or point in the notch, outer sepals green, inner ones linear, anther acute. — *α.* lip lobed, inner sepals glabrous. *E. B.* t. 65. — *β.* lip undivided with a spreading wavy margin, inner sepals scabrous. O. fucifera *Sm.*: *E. B. S.* t. 2649.

Chalky and clayey pastures and pits. — β. Kent. ♃. 4, 5. — *Lip* shorter and broader than in *O. apifera;* its colour deep brown, with paler lines not unfrequently resembling the Greek letter π. Mr G. E. Smith is now satisfied that *O. fucifera* is only a var. of the present.

4. O. *muscífera* Huds. (*Fly O.*); lip oblong 3-fid middle segment larger 2-lobed, lateral inner sepals filiform, anther short obtuse. *E. B.* t. 64.

Chalky and clayey pastures in England; abundant in many parts of Norfolk, Suffolk, Surrey, and Kent. ♃. 5—7. — Well distinguished from all the preceding by its very slender, lateral *inner sepals*, which resemble the antennæ of an insect, and by its narrow *lip*, 2-lobed at the extremity, and having a broad pale bluish spot in its centre.

V. *Fertile anthers* 2, *lateral, with a central one sterile and petaloid.* CYPRIPEDIEÆ.

15. CYPRIPÉDIUM *Linn.* Lady's Slipper.

Lip large, inflated. *Column* with a large terminal, dilated lobe (or sterile *stamen*) separating the 2 *anthers*. Two lateral or lower *outer sepals* often combined. — Named from Κυπρις *Venus*, and ποδιον, a *sock* or *slipper;* i. e. *Venus' slipper*.

1. C. *Calcéolus* L. (*common Lady's Slipper*); stem leafy, terminal lobe of the column nearly oval, lip shorter than the calyx somewhat laterally compressed. *E. B.* t. 1.

Woods in the north of England, very rare (almost extinct). ♃. 5. — One of the most beautiful and interesting of our native plants.

ORD. XC. IRIDACEÆ.

Limb of the *perianth* 6-cleft, or 6-partite, sometimes irregular. *Stamens* 3, inserted into the base of the outer segments. *Filaments* sometimes united. *Anthers* fixed by their base, opening outwards. *Ovary* 3-celled, many-seeded. *Style* 1. *Stigmas* 3, or 1 with 3 divisions, often petaloid or 2-lipped. *Capsule* 3-celled, 3-valved; *valves* bearing the dissepiments in the middle. *Seeds* round, hard. *Albumen* horny or firmly fleshy. *Embryo* with the same direction as the seed. — Herbs, *rarely* undershrubs. Leaves *equitant* (*except in* Crocus). Flowers *spathaceous, sometimes partly subterranean.* — *Orris-root* is from *Iris Florentina*.

1. IRIS. Perianth 6-cleft; alternate segments longer and reflexed. Stigmas 3, petaloid, covering the stamens.

1ª. Sisyrhynchium. Perianth 6-cleft; segments nearly equal, patent; tube scarcely longer than the limb. Stigma 3-partite, segments filiform. Stamens monadelphous.

2. Trichonema. Perianth 6-cleft; segments equal; tube shorter than the limb. Stigma tripartite, segments deeply bifid, slender. Stamens distinct.

3. Crocus. Perianth 6-cleft; segments equal; tube very long (much longer than the limb). Stigma trifid or 3-partite, segments widening upwards. Stamens distinct.

1. Iris *Linn.* Iris or Flower de Luce.

Perianth 6-cleft, each alternate segment longer and reflexed. *Stigmas* 3, petaloid, covering the stamens. — Named from Ιρις, the *rainbow*, on account of the beautiful and varied colours of its flowers.

1. I. *Pseud-ácorus* L. (*yellow Water I.* or *Corn-flag*); leaves sword-shaped, perianth beardless its inner segments smaller than the stigmas. *E. B.* t. 578.

Watery places, wet meadows and in woods, frequent. ♃. 5—8. — *Flowers* large, deep or rarely pale yellow (*Bot. Mag.* t. 2239). *Rhizoma* large, very acrid: a piece of it held between the teeth is said to cure the tooth-ache, and is otherwise used medicinally, also for giving a black dye, and making ink. The roasted *seeds* are recommended as a substitute for coffee.

2. I. *fœtidíssima* L. (*stinking I.*); leaves sword-shaped, perianth beardless its inner segments spreading about as large as the stigmas, stem one-angled. — *α.* flowers purple. *E. B.* t. 596. — *β.* flowers yellow.

Woods, thickets, and pastures; frequent in the southern and western parts of England, rare in the middle and northern counties: not known in a wild state in Scotland. — *β.* About Swanage near Corfe Castle, Dorsetshire; Hants. ♃. 6, 7. — *Flowers* much smaller than the last, dull livid purple, or in *β.* yellow. The *leaves*, when bruised, emit a very disagreeable odour, which some have, however, compared to roast-beef, whence its common English name, *Roast-beef plant*. In Devonshire it is so frequent, that one can hardly avoid walking among it when herborizing, and being annoyed by the smell.

(*Iris tuberosa* L.: E. Bot. Suppl. t. 2818, is a native of the Levant and other countries bordering on the Mediterranean, formerly cultivated for its medicinal properties, and cannot be admitted into our flora. Mr. Borrer has seen the plant in two of Mr. Penwick's five stations, and assures us that "they are very near farm-houses." For the same reason we scarcely deem *I. Xiphium*, *I. xiphioides*, *I. pumila*, or *I. Germanica* worthy of notice, although all have been reported "indigenous." — Nor can we admit *Sisyrhynchium anceps*, which is a well known N. American plant,—indeed the genus is not European,—it has been found near Woodford, Loughrea, Galway, Ireland, by Mr. Lynam.)

2. Trichonéma *Ker.* Trichonema.

Perianth single, petaloid, in 6 deep equal segments, *tube* shorter than the *limb*. *Stam.* 3. *Filaments* hairy. *Stigma* bipartite, slender. *Seeds* globose. — Named from θριξ, τριχος a *hair*, and νημα, a *filament*.

1. T. *Colúmnæ* Reich (*Columna's T.*); scape single-flowered mostly solitary slightly drooping, leaves filiform compressed furrowed flexuose, spathas longer than the tube of the corolla style shorter than the stamens, stigmas bifid at the apex. Romulea *Mauri Fl. Rom.* p. 18. Trichonema Bulbocodium *Sm.* Ixia Bulbocodium *E. B.* t. 2549 (not of *Linn.?*)

Grassy pastures in Guernsey and Jersey. The Warren, Dawlish. ♃. 3, 4. — A small bulbous plant, with pale bluish-purple and yellow *flowers*. Mauri appears to have well distinguished the two European species of this genus.

3. Crócus *Linn.* Crocus.

Perianth single, coloured; *tube* very long; *limb* cut into 6 equal segments. *Stam.* 3, distinct. *Stigma* 3-parted or 3-cleft, segments widening upwards, plaited. — Named from κροκη, a *thread* or filament, from the appearance of the *saffron* of the shops, which consists of the dried stigmas of *Crocus sativus*. — (In all this Genus the germen is concealed under-ground, elevated by a short peduncle from the solid bulb (*cormus*), which peduncle elongates, after the decay of the flower, and the capsules appear above-ground.)

* *Flowers in spring, along with the leaves.*

† *Scapes enveloped in a tubular sheath.*

1. *C. *vérnus* Willd. (*purple Spring C.*); stigma within the flower erect cut into 3 jagged wedge-shaped lobes, cormus clothed with slender anastomosing fibres. *E. B.* t. 344. C. sativus *β. L.*

Meadows and fields. Plentiful about Nottingham. ♃. 3.

†† *Scapes naked.*

2. *C. *mínimus* Red. (*least purple C.*); spatha double, stigmas erect longer than the stamens included in the solitary flower, leaves linear filiform, cormus with a membranous coat. C. præcox *Haw. in E. B. S.* t. 2645. C. reticulatus *E. Fl.* vol. iv. p. 262. (not *Bieb.*) C. biflorus *Mill.?*

In Sir H. Bunbury's park at Barton, Suffolk. ♃. 3.

3. *C. *aúreus* Sm. (*golden C.*); spatha simple, stamens longer than the stigma, segments of the corolla oblong incurvo-patent, cormus coated with compact fibres. *E. B. S.* t. 2646.

With the preceding, and equally the outcast of gardens. ♃. 3. — This Mr. Borrer considers not specifically distinct from *C. mæsiacus* Gawl. (*C. vernus* Curtis in *Bot. Mag.*)

** *Flowers in autumn, before the leaves. Scapes enveloped in a tubular sheath.*

4. *C. *sativus* L. (*Saffron C.*); spatha double, stigma in three deep linear divisions protruded drooping, cormus clothed with slender anastomosing fibres. C. autumnalis *E. B.* t. 343.

Meadows; as about Saffron Walden in Essex, where it is cultivated for the sake of its fragrant *stigmas*, which constitute *saffron*. ♃. 9. — We fear this plant, far from being a native, is not even naturalized in this country.

5. *C. *nudiflórus* Sm. (*naked-flowering C.*); stigma within the flower erect in 3 deeply laciniated segments, cormus with a membranous coat — *α*. stigma equal in height with the anthers. *E. B.* t. 491. — *β*. stigma considerably longer than the anthers. C. speciosus *Hook.* (*M. Bieb.?*, not *Reich*): *E. B. S.* t. 2752.

α. Between Nottingham Castle and the Trent in a large meadow called the Siddals, on the banks of the Derwent, near the Derby Railway Station. — *β*. Meadows near Warwick, Warrington, and about Halifax. ♃. 9, 10.

Ord. XCI. AMARYLLIDACEÆ *R. Brown.*

Limb of the *perianth* coloured, 6-partite or 6-cleft. *Stamens* 6, inserted at the bottom of the segments, sometimes united by a membrane. *Anthers* opening inwards. *Ovary* inferior, 3-celled; the *cells* many-seeded, or in those whose fruit is fleshy, 1—2-seeded. *Style* 1. *Stigma* 3-lobed. *Fruit* capsular: either dry with 3 valves bearing the dissepiments in the middle, 3 cells and many *seeds*; or fleshy with 1—3 *seeds*. *Integument* of the seed not crustaceous. *Embryo* straight, in the axis of a fleshy *albumen*, having the same direction as the seed. — Flowers *large, generally of a bright colour*. Leaves *fleshy, indistinctly nerved, all radical*. Roots *bulbous*.

1. Narcissus. Perianth tubular at the base, with a 6-partite limb, and a campanulate crown or nectary.
2. Galanthus. Perianth 6-partite, campanulate, 3 outer sepals spreading, 3 inner smaller, erect, emarginate; crown none.
3. Leucojum. Perianth 6-partite, campanulate, sepals all equal and a little thickened at the point; crown none.

1. Narcíssus *Linn.* Narcissus. Daffodil.

Perianth coloured, tubular at the base, with a spreading 6-partite *limb*, and a campanulate or cup-shaped *crown* or *nec-*

tary, within which are the *stamens*. *Anthers* dehiscing longitudinally. *Flowers* from a *spatha*.—Named from *ναρκη*, *stupor*, in allusion to the powerful and injurious smell of the flowers. More immediately derivable from the youth *Narcissus*, who is fabled to have been changed into this plant. An inhabitant sometimes of watery places, by the banks of streams.

1. N. *Pseudo-narcissus* L. (*common D.*); spatha single-flowered, nectary campanulate erect crisped at the margin obsoletely 6-cleft, as long as the ovate segments of the perianth. *E. B.* t. 17.

Moist woods and thickets. Rare in Scotland; about Culross and Dunoon, but scarcely indigenous. Near Templeogue, Ireland. ♃ 3, 4.—*Flowers* large, yellow.

2. N. **poéticus* L. (*the Poet's N.*); spatha mostly single-flowered, nectary very short concave membranous and crenate at the margin, leaves with an obtuse keel. *E. B.* t. 275.

Heathy open fields on a sandy soil, said to be wild in Norfolk and Kent. ♃. 5.—Larger than the last, with a *flower* of a very different structure, and a deeply coloured border to the *nectary*. Its beauty and delicious odour have recommended it to general culture. Smith says it is the true *Narcissus* of the Greek writers, and clearly described by Dioscorides.

3. N. **biflórus* Curt. (*pale N.*); spatha 2-flowered, nectary very short concave membranous and crenate at the margin, leaves acutely keeled. *E. B.* t. 276.

Sandy fields, Kent; Herts; near Totness, Devon; Hampshire, apparently quite wild; thoroughly established (with *N. incomparabilis*) at Kilvington, near Thirsk. About Dublin, frequent. ♃. 5, 6.—Similar to the last in the general form of the *flowers*, but they are smaller, not of so pure a white, without the coloured border to the nectary, and with a less agreeable scent.

(Besides the above, *N. conspicuus*, *incomparabilis*, *minor*, and *lobularis* have been all enumerated as "wild," or "naturalized," in England; none of them have however any right to a place in our Flora; and even two of those usually admitted, because they were sanctioned by Smith's authority, and figured in *E. Bot.*, ought to be rejected.)

2. Galánthus *Linn.* Snowdrop.

Perianth campanulate, of 6 pieces, 3 outer ones spreading, 3 inner smaller, erect, emarginate. *Anthers* opening by a pore. *Seed* with a whitish skin. *Flowers* from a *spatha*.—Scape *solid*.—Named from *γαλα*, *milk*, and *ανθος*, a *flower*. The French name, *perce-neige*, is very expressive.

1. G. **nivális* L. (*common S.*) *E. B.* t. 19.

Woods, orchards, meadows, pastures, &c., in very many places in England, Scotland, and Ireland. ♃. 2, 3.—*Bulb* ovate. *Leaves*

2, broadly linear, glaucous-green. *Flowers* solitary, drooping, elegant, rendering this plant a general favourite.

3. Leucójum *Linn.* Snowflake.

Perianth campanulate, of 6 equal pieces, a little thickened at the point. *Anthers* opening by a slit near the apex. *Seed* with a black and shining skin. *Flowers* from a *spatha.* — Scape *hollow.* — Named from λευκος, *white*, and ιον, a *violet.*

1. L. **æstívum* L. (*Summer S.*); spatha many-flowered, style club-shaped. *E. B.* t. 621.

Moist meadows; Thames' side, below Greenwich, especially the Kentish shore; in Suffolk, Berkshire, Westmoreland, Northumberland, &c. ♃. 5. — *Leaves* long, linear, keeled; *scape* 2-edged. *Flowers* white, drooping.

** *Leaves with netted veins.* (Ord. XCII.)

Ord. XCII. DIOSCOREACEÆ *R. Brown.*

Dicœcious. Limb of the *perianth* with 6 divisions. — *Sterile fl. Stamens* 6 from the base of the perianth. — *Fertile fl. Ovary* 3-celled; *cells* 1—2-seeded. *Style* deeply trifid. *Stigmas* undivided. *Fruit* dry and flat, with 2 of its cells frequently abortive, or (in *Tamus*) baccate. *Embryo* small, near the *hilum*, lying in a large cavity of cartilaginous *albumen.* — Stems *twining*, shrubby *or* herbaceous, *mostly tropical.* Leaves *with reticulated veins.* Flowers *small*, *bracteated.* — *Dioscorea sativa* affords the well-known *Yam.*

1. Tamus *Linn.* Black Bryony.

Barren fl. Perianth single, in 6 deep segments. — *Fertile fl. Perianth* single, superior, in 6 deep segments, contracted at the neck. *Stigmas* 3. *Berry* of 3 cells. — Name: supposed to be the *Uva Taminia* of Pliny, or *Black Bryony.*

1. T. *communis* L. (*common B.*); leaves undivided cordate acute. *E. B.* t. 91.

Hedges and thickets, England. ♃. 5—7. — *Root* very large, acrid, black externally, fleshy. *Stems* long, twining and reaching among trees and bushes to a great distance. *Flowers* greenish-white. *Berry* red. According to the late Dr. Bromfield, this is scarcely indigenous.

Div. II. *Ovary superior, free, not adnate with the tube of the perianth.* (Ord. XCIII.—CV.)

* *Perianth conspicuous. Seeds with albumen.* (Ord. XCIII.—XCVII.)

Ord. XCIII. TRILLIACEÆ *De Cand.*

Flowers perfect. *Sepals* 6—10 (rarely 4), outer ones herbaceous; inner herbaceous or much larger and coloured, rarely wanting. *Stamens* 6—10. *Anthers* linear, the cells fixed one on each side near the middle or the apex of a subulate filament. *Ovary* free, 3—5-celled, with as many distinct *styles*. *Stigmas* inconspicuous. *Ovules* numerous, in 2 rows in each cell, ascending. *Fruit* succulent, 3—5-celled. *Seeds* numerous; the skin brownish, leathery. *Albumen* fleshy, with a minute *embryo* close to the *hilum*. — Stems *simple*, *herbaceous*. Leaves *sessile*, *verticillate*, *membranaceous*, *with netted veins*, *not articulated with the stem*, *marcescent*. Flowers *large*, *terminal*, *solitary*.

1. Páris *Linn.* Herb-Paris.

Perianth of 6—10 narrow, very patent or reflexed *sepals*, inner ones scarcely coloured. *Cells* of the *anthers* fixed one on each side the middle of a subulate *filament*. *Berry* 3—5-celled. —Named, it is said, from *par*, *paris* (*equal*), on account of the regularity of its leaves and flowers.

1. P. *quadrifólia* L. (*common H.*); leaves ovate 4—5 in a whorl. *E. B.* t. 7.

Moist and wet shady woods, in many parts of England and Scotland. Killarney, Ireland. ♃. 5, 6. — *Stem* 1 ft. high, with 4, rarely 5, whorled, large, ovate, acute *leaves* at its summit, the rest leafless. *Flower* single, terminal, on a foot-stalk about 2 inches long. *Perianth* of 8 (rarely 6 or 10) *sepals*; outer ones linear-lanceolate, green; inner similar to these, but narrower and more yellow. *Roots* purgative. *Berry* esteemed poisonous; but it has been employed in curing inflammation in the eyes.

Ord. XCIV. LILIACEÆ *Juss.*

Flowers perfect or very rarely imperfect. *Sepals* 6 (rarely 4) all petaloid, regular or nearly so, occasionally cohering at the base in a tube. *Stamens* 6 (rarely 3 or 4) inserted upon the sepals. *Anthers* opening inwards. *Ovary* free from the

perianth, 3- (or rarely 2-) celled. *Style* 1, undivided. *Stigma* simple or 3- (or rarely 2-) lobed. *Fruit* succulent or dry and capsular, 3- (or rarely 2-) celled. *Seeds* usually placed one above another in 2 rows in each cell, sometimes in pairs or solitary. *Albumen* fleshy.—Herbs, shrubs, *or* trees, *with* bulbs *or* tubers *or* rhizomas *or fibrous* roots. Leaves *with parallel veins or nerves, never articulated with the stem, mostly narrow.* Flowers *usually large and showy, sometimes small and greenish.*—Many of the family contain a bitter juice. The root of *Scilla maritima* (or *Urginea Scilla*) affords the *Squill* of the shops. *Socotrine Aloes* are produced by *Aloe Socotrina; Barbadoes Aloes* by *A. perfoliata. New Zealand Flax* is the fibre from the leaves of *Phormium tenax. Gum-Dragon* is the concrete juice of *Dracæna Draco.*

* *Fruit a berry. Roots never bulbous.* (*Ovules* 2 *in each cell in* British *genera.*) Asparageæ.

1. Asparagus. Perianth 6-partite, campanulate, deciduous. Stam. 6, distinct. Stigmas 3, reflexed. Flowers jointed with their pedicel.
2. Ruscus. Perianth 6-partite, persistent. Stamens connected at the base. Style surrounded by a nectary (tube formed by the sterile stamens). Stigma capitate. Flowers imperfect.
3. Convallaria. Perianth companulate, 6-cleft, deciduous. Stamens 6, distinct. Stigma 1. Flowers perfect, not jointed with the pedicel.
4. Polygonatum. Perianth cylindrical, 6-cleft at the apex, scarcely deciduous. Stam. 6, distinct. Stigma 1. Flowers perfect, jointed with the pedicel.

4a. Maianthemum. Perianth 4-partite, spreading, deciduous. Stam. 4, diverging, inserted into the base of the segments. Anthers ovate. Flowers perfect, not jointed with the pedicel.

** *Fruit dry, capsular. Roots never bulbous. Flowers jointed with their pedicel.* Anthericeæ.

5. Simethis. Flowers perfect. Perianth 6-partite, spreading, deciduous. Stam. 6; filaments bearded. Ovules 2 in each cell.

*** *Fruit dry, capsular. Root bulbous. Flowers usually on a leafless scape, and with membranaceous bracteas or spathas, but no true leaves at the base of the pedicels which are not jointed with the flower. Ovules numerous in each cell.* Scilleæ.

† *Sepals combined below or forming a companulate perianth. Anthers attached to the filament by their back above the base.*

6. Agraphis. Perianth 6-partite, tubular-campanulate, sepals reflexed at the extremity. Filaments longish, decurrent.
7. Muscari. Perianth globose or subcylindrical, contracted at the mouth, 6-toothed. Filaments very short.

†† *Sepals distinct, spreading. Anthers attached to the filament by their back.*

8. Allium. Flowers umbellate, inclosed at first in a 1—2-leaved spatha.

9. Scilla. Flowers racemose, on a scape. Spatha 0. Perianth deciduous.
10. Ornithogalum. Flowers white, racemose or corymbose, on a scape. Spatha 0. Perianth persistent.

**** *Fruit dry, capsular. Root bulbous. Stem more or less leafy. Peduncles (or pedicels) without membranaceous bracteas at their base springing from the axils of true leaves and not jointed with the flowers. Sepals distinct. Ovules many in each cell.* Tulipeæ.

† *Anthers erect.*

11. Gagea. Flowers yellow, corymbose or umbellate. Sepals without a nectariferous fold or depression. Style conspicuous.
12. Lloydia. Flowers white tinged with red, solitary or few and corymbose. Sepals with a transverse nectariferous fold near the base. Style conspicuous.
13. Tulipa. Flowers usually solitary, rarely 2 on each stem. Style 0.

†† *Anthers attached above the base in front.*

14. Fritillaria. Sepals with a nectariferous depression at the base. Style 3-cleft at the apex.
14a. Lilium. Sepals with a longitudinal nectariferous furrow at the base. Style undivided. Stigma capitate.

* *Roots never bulbous. Fruit fleshy.* Asparageæ. (Gen. 1—4.)

1. Aspáragus *Linn.* Asparagus.

Flowers perfect or occasionally imperfect, jointed with the pedicel. *Perianth* campanulate, tubular at the base, 6-partite, deciduous. *Stamens* 6, distinct. *Anthers* peltate. *Ovary* 3-celled, with 2 *ovules* in each cell. *Stigmas* 3, reflexed. *Berry* globose, 3-celled. — Name: ασπαραγος, in Greek, from σπαρασσω, to *tear*; many of the species being armed with spines.

1. A. *officinális* L. (*common Asparagus*); unarmed, stem herbaceous mostly erect rounded very much branched, leaves setaceous fasciculate flexible, peduncles jointed in the middle. *E. B.* t. 339. — β. stem procumbent.

In several parts of the west and south-west coasts of England. On an island, thence called "*Asparagus Island*," Kynance Cove, Cornwall. Links near Gosford, Scotland. — β. south-west coast of Anglesea, rare: *Mr. W. Wilson.* 4. 6—8. — *Root* creeping, throwing up numerous scaly erect or rarely procumbent *stems*, which, when cultivated, are the *Asparagus* of our tables; rarely, in a wild state, exceeding a foot in height. *Flowers* drooping, greenish-white, often imperfect, with obsolete *styles*. *Berries* bright red.

2. Rúscus *Linn.* Butcher's Broom.

Dicœcious. *Perianth* spreading, of 6 sepals. *Filaments* combined in a tube. — *Barren fl. Anthers* 3—6, reniform, placed

on the summit of the stamen-tube. — *Fertile fl. Anthers* 0. *Style* 1, surrounded by the tube of the sterile stamens. *Stigma* capitate. *Ovary* 3-celled; *ovules* 2 collateral in each cell. *Berry* usually 1-seeded. — Name, anciently *bruscus;* from *bruskelen,* in Celtic, *box-holly.*

1. R. *aculeátus* L. (*common B.*); stem rigid branched, leaves ovate-acuminate very rigid and pungent bearing the solitary flower on their upper surface. *E. B.* t. 560.

Bushy and heathy places and woods, especially in a gravelly soil. Abundant in the south of England and Jersey. Bothwell woods, and Skeldon woods near Ayr; but not truly wild in Scotland. ♄. 3, 4. — *Flowers* minute, white, arising from the disk of the evergreen *leaves. Berry* red.

3. Convallária *Linn.* Lily of the Valley.

Flowers perfect, not jointed with the pedicel. *Perianth* deciduous, campanulate, 6-cleft, segments recurved. *Stamens* 6, distinct, inserted into the very base of the perianth. *Anthers* linear, pointed. *Ovary* 3-celled, with 2 superposed *ovules* in each cell. *Style* short, thick. *Stigma* 1, obtuse, *Berry* 3-celled, with 1 (or rarely 2) *seeds* in each cell. — Flowers *racemose, with a membranaceous* bractea *at the base of the* pedicels. — Name, — *convallis*, a *valley;* from the locality of this plant.

1. C. *majális* L. (*sweet-scented L.*). *E. B.* t. 1035.

Woods and coppices, particularly in a light soil. Frequent in England, more rare, if indigenous, in Scotland. ♃. 5—7. — *Leaves* 2, ovate-lanceolate, radical. *Scape* semicylindrical. *Flowers* racemed, very pure white, fragrant, segments recurved. *Berries* red, globose.

4. Polygonátum *Tournef.* Solomon's Seal.

Flowers perfect, jointed with the pedicel. *Perianth* tardily deciduous, cylindrical, shortly 6-cleft at the summit, the lobes erect. *Stam.* 6, distinct, inserted upon the middle of the tube of the perianth. *Anthers* linear. *Ovary* 3-celled, with 2 superposed *ovules* in each cell. *Style* filiform. *Stigma* 1, obtuse. *Berry* 3-celled; cells 2- (or rarely 1-) seeded. — Peduncles *or* pedicels *axillary, without membranaceous* bracteas at the base. — Named from πολυς, *many*, and γονυ, γονατος, a *knee* or *angle*, on account of the angled stems.

1. P. *verticillátum* All. (*narrow-leaved S.*); leaves lanceolate whorled. Convallaria *L.*: *E. B.* t. 128.

Woods and glens, very rare, and only found in Scotland. Den of Rechip, 4 miles N.E. of Dunkeld; Blair in Athol; Blair Gowrie; and several other places in the same district. ♃. 6. — *Stem* 2 ft. high. *Leaves* numerous, bright green, 3—4 in a whorl. *Flowers*

solitary, or with branched footstalks, drooping.—We have been induced to adopt the present genus on account of its difference of habit and having so few characters in common with the last, the jointed pedicel being thought sufficient by some botanists to remove several genera of this Order into a different division from others.

2. P. *multiflórum* All. (*common S.*); leaves ovate-elliptical alternate half-embracing the rounded stem, peduncles one- or many-flowered, filaments hairy. Convallaria *L.*: *E. B.* t. 279.

Woods and coppices, in various parts of England and the south of Scotland; also at Kingusie, 7 miles from Aberdeen. ♃. 5, 6.—*Stems* 2 ft. high, bare of leaves below. *Leaves* large, marked with longitudinal nerves, secund; the *flowers* drooping in an opposite direction, white, greenish at the tips. *Berries* bluish-black.

3. P. *officinále* All. (*angular S.*); leaves ovate-elliptical alternate half-embracing the angular stem, peduncles mostly single-flowered, filaments glabrous. Convallaria Polygonatum *L.*: *E. B.* t. 280.

Woods in England, rare. Yorkshire; Somerset; Kent. ♃. 5—6. — Smaller than the last. *Flowers* greener, fragrant.

(*Maianthemum bifolium* DC. has two stations assigned to it in the N. of England in Gerarde's Herbal, and more lately has been said to be found in Northumberland and Middlesex. We do not believe it to be indigenous, although it may be naturalized in one or two places.)

** *Roots never bulbous. Fruit dry, capsular.* Anthericeæ. (Gen. 5.)

5. Siméthis *Kunth.* Simethis.

Flowers perfect, jointed with the pedicel. *Perianth* 6-partite, spreading, deciduous. *Stam.* 6, distinct. *Filaments* woolly upwards. *Anthers* oblong, emarginate. *Ovary* 3-celled, with 2 superposed *ovules* in each cell. *Style* filiform. *Stigma* entire. *Capsule* 3-celled; cells 2-seeded. — Named after the Sicilian Nymph Simethis or *Simæthis.* (See Ovid Met. xiii. 750.)

1. S. *bícolor* K. (*variegated* S.). *Kunth Enum.* iv. p. 618. Anthericum *Desf.* Phalangium *DC.* Anthericum planifolium *L.* Phalangium *Pers.*: *E. B. S.* t. 2952.

Barren heaths. In a plantation of firs (chiefly of *Pinus maritima*) on Poole heath, Dorsetshire, perhaps introduced with the trees from France. Derrynane, co. Kerry. ♃. 6. — *Root* a number of fleshy fibres, said to be purgative. *Leaves* linear, flat, somewhat carinate and folded especially at the upper part. *Scape* and *leaves* embraced by sheathing scales. *Flowers* panicled, on long stalks, erect, white within, externally violet or purple at the summit and on the margin. *Pedicels* with a membranaceous bractea at their base. *Seeds* black and shining, attached to the axis of the capsule by short thick white

etc. &c.— Although the specific name *planifolium* is the oldest, it is scarcely applicable, and we therefore adopt that which was retained for the plant when removed from the genera with which it had been associated.

*** *Root bulbous. Fruit dry, capsular. Flowers usually on a leafless stem or scape and with membranaceous bracteas or spathus, but no true leaves, at the base of the pedicels which are not jointed with the flower. Ovules numerous in each cell of the ovary. Seeds with a black crustaceous shining coat.* Scilleæ. (Gen. 6—10.)

6. A'GRAPHIS *Link.* Blue-bell.[1]

Perianth 6-partite; sepals connivent below and forming a campanulate tube, somewhat connected at the base, recurved at the extremity. *Stamens* 6, inserted below the middle of the perianth, on which the filaments are decurrent: alternate ones longer and somewhat exserted. *Capsule* obtusely 3-angled, 3-celled, 3-valved at the apex, few-seeded. — Flowers *racemose, with membranaceous* bracteas *at the base of the* pedicels. — Named from *a. not*, and *γραφω, to write or mark*, these plants being supposed by some to be the flowers noticed by Virgil[1] whereon were inscribed the names of kings, but which now exhibit nothing resembling written characters: and also because the genus *Hyacinthus* was named after the youth Hyacinthus, who, being killed by Apollo, was by him changed into a plant, whose foliage bore in dark streaks the initials of his name: the *A. nutans* being placed by Linnæus in that genus, and having no mark or figure on the leaf, was hence called *H. non-scriptus*, which specific name is the same as *Agraphis*.

1. A. *nútans* Link (*wild Hyacinth* or *B.*); flowers in a raceme drooping, sepals revolute at the points, bracteas in pairs, leaves linear. Scilla *Sm.*: *E. B.* t. 377. Hyacinthus non-scriptus *L.*

Woods, copses, and hedge-rows; varying with white and more rarely rose-coloured *flowers*. ♃. 4—6. — *Leaves* long, linear, channelled, acuminate. *Scape* 1 foot high, with two *bracteas* at the base of each short *pedicel*. — The habit of this plant is surely more that of *Hyac. orientalis* than of any true *Scilla*.

7. Muscári *Tourn.* Grape-Hyacinth.

Perianth inferior, of 1 piece, globose or subcylindrical, contracted at the mouth, 6-toothed. *Filaments* very short, not decurrent on the perianth, inflated, 6-toothed. *Capsule* tri-

[1] "Dic quibus in terris inscripti nomina regum
Nascantur flores." — *Virg. Ecl.* x. 18.

Gladiolus communis or *Fritillaria Meleagris* corresponds better to this description.

gonous, with prominent angles; *cells* 2-seeded.—Flowers *racemose.*—Named from μοσχος, *musk*, a smell yielded by one species.

1. M. **racemósum* Mill. (*Starch G.*); flowers crowded ovate upper ones nearly sessile abortive, leaves linear flaccid keeled longer than the scape. Hyacinthus *L.*: *E. B.* t. 1931.

Grassy fields, &c. Sandy fields at Caversham, Suffolk, certainly indigenous: *Bromfield.* ♃. 5.—*Flowers* deep blue, smelling like starch.

8. A'LLIUM *Linn.* Onion. Leek. Garlic.

Perianth inferior, petaloid, of 6 ovate spreading pieces. *Caps.* triquetrous. Flowers *umbellate, arising from a 2-leaved spatha.*—Named from the Celtic *all*, which signifies *acrid, burning.* (*Théis.*)

* *Stem-leaves not fistulose (plane or keeled). Alternate filaments 3-pointed, middle point bearing the anther.*

1. A. **Ampeloprásum* L. (*flowering great round-headed G.*); umbels globose without bulbs, leaves linear keeled acuminate, stamens exserted, 3 alternate ones deeply 3-cleft, middle point as long as the entire part of the filament, spatha 1-leaved pointed. *E. B.* t. 1657.

Rare. On Holmes Island in the Severn; *Ray*:—the remains of ancient cultivation; *Borrer.* Great Arran Island, Galway Bay, Ireland; *Mr. W. Andrews.* ♃. 8.—*Bulb* compound, of 2—4 divisions. *Stem* 2—3 ft. high, with broad acuminate *leaves*, and large heads of purplish-white *flowers.* Allied to *A. Porrum*, the *leek*, in habit, but differing in its perennial and clustered young bulbs; and as Ray states his plant to have a simple bulb, Mr. P. B. Webb concludes with justice that the one from Holmes Island is *A. Porrum.* It is not known as a native of the western districts of France, and *A. Porrum* itself is nowhere found truly wild. The specific name, from αμπελος, a *vine*, and πρασον, a *leek*, means *leek of the vineyard. Porrum*, says Théis, is from *pori*, to eat, in Celtic; whence comes our word *porridge.*

2. A. *Babingtóni* Borr. (*bulbiferous great round-headed G.*); umbels globose with spherical (large) bulbs proliferous, stem leafy below, leaves linear acutely keeled, stamens exserted "incurved at the point when young," 3 alternate ones 3-cleft, middle point rather shorter than the entire part of the filament, spatha 1—2-leaved long-pointed. *Borr. in E. B. S.* t. 2906. A. Halleri *Bab. Man.* ed. 1.

Rare. Grade and Ruan Minor, Cornwall, (but only in or near orchards). Round Stone, Galway; and South Isles of Arran; Ireland. ♃. 8.—This differs from the last almost solely by having most of the flowers converted into large bulbs, a character, which al-

though employed to distinguish the species of this genus, indicates rather a disease than a distinct organism; all the other characters may be the effect of such metamorphosis. Mr. W. Andrews finds it growing with *A. Ampeloprasum* in Great Arran Island, and considers it only a variety. It is probably usually confounded on the Continent with the next. *Bulb* compound, of 2 divisions, with a few external yellow-brown stalked offsets from the crown of the root.

3. A. *Scorodoprásum* L. (*Sand G.*); umbels globose loose few-flowered with numerous spherical (small) bulbs, stem leafy below, leaves linear flat, sheaths 2-edged, stamens included or as long as the perianth, 3 alternate ones 3-cleft, middle point shorter than the lateral ones and the entire part of the filament, leaves of the spatha with a very short point. *E. B. S.* t. 2905. A. arenarium *L.: Sm.: E. B.* t. 1358 (as to the description, but not the figure).

Mountainous woods and fields, in sandy soil, principally in the N. of England and Scotland, but not common. Portmarnock sands, Ireland. ♃. 7. — *Bulb* simple, with numerous stalked purple offsets. *Stem* 2—3 ft. high, leafy below, rounded, smooth, slender and wavy, yet firm and solid. *Spatha* usually single, scariose, short and broad, with a short point. *Bulbs* of flowers not so large as a pea. *Flowers* mostly few, never so numerous as the bulbs, on stalks usually much longer than the bulbs. This is not the *Scorodoprasum* of old authors, that name being sometimes given to *A. Ampeloprasum*, and sometimes to a variety of the *Leek* or *A. Porrum*, nor even of some modern botanists, whose plant is a large form of *A. sativum: Borrer.*

** *Stem-leaves narrow, not fistulose (flat or keeled, or grooved above). Filaments all simple, connected at the base. Spatha 2-valved, one valve with a long point.*

4. S. *oleráceum* L. (*streaked Field G.*); umbels lax bearing bulbs, stem leafy below, leaves linear grooved above semiterete or flat and ribbed beneath, stamens simple as long as or shorter than the perianth. — *α.* leaves thick semiterete and 4-ribbed beneath thinner towards the summit. *E. B.* t. 488. — *β.* leaves equally thick compressed and many-ribbed beneath. A. carinatum *Sm.* (not Linn.?): *E. B.* t. 1658.

Borders of fields in Essex, about Bristol, in Norfolk, Westmoreland, and Yorkshire. — *β.* Sandy ground on the south-east coast, and mountainous situations in the north of England. ♃. 7. — *Stems* rounded, leafy below. *Flowers* upon long wavy peduncles, pale-brownish white. Smith considered his *A. carinatum* to differ only from *A. oleraceum* by the more compressed leaves: most authors now conjoin them. The true *A. carinatum* of Linnæus is said to be characterized by its exserted stamens.

*** *Leaves fistulose. Filaments all simple, distinct.*

5. A. *Schœnoprásum* L. (*Chive G.*); umbels many-flowered

globose without bulbs, stem naked or with one leaf rounded leaves subulate-filiform fistulose rounded or grooved above spatha of 2 ovate leaves, stamens simple about half the length of the perianth. — *α.* leaves and stem straight. *E. B.* t. 2447 A. arenarium *E. B.* t. 1358 (as to the figure). — *β.* leaves spreading curved, umbel drooping before the flowers expand A. Sibiricum *L.: Borr. in E. B. S.* t. 2934.

Meadows and pastures rare. Westmoreland, Berwickshire, and Argyleshire. — *β.* between Kynance Cove and Mullion, and at Tintagel, Cornwall. ♃. 6, 7. — *Stem* 1 ft. high. Heads of *flowers* compact, purplish. *Stam.* simple. *Spatha* of two short ovate leaves. *Umb* without bulbs. — Specific name from σχοινος, a *rush*, and πρασον, *leek:* i.e. *rush-leaved onion.* We consider the figure of *A. arenarium* in E. B. to have been taken from this species, the leaf being erroneously represented. " The plant among the rocks at Kynance (at least that which I have seen in various places along the cliffs between Kynance Cove and Mullion) is *A. Sibiricum* Linn., differing, whether specifically or not, from *A. Schœnoprasum* (the *chive* of our kitchen gardens) by its larger size, less clustered bulbs, variously curved, instead of upright leaves, and (under a glass) crenulate, instead of even striæ of the stem and leaves, peculiarities which it has retained several years in my garden. *A. Sibiricum* abounds also on the sea cliffs at Tintagel, where it was discovered by the *Rev. R. T. Bree* (*Mr. Borrer.*)

**** *Leaves fistulose. Alternate filaments 3-pointed, middle point bearing the anther.*

6. A. *vineále* L. (*Crow G.*); umbel globose bearing numerous bulbs, stem leafy below, leaves fistulose cylindric slightly channelled above, spatha of one leaf short with long slender points, stamens exserted 3 alternate ones deeply 3-cleft middle points half as long as the lateral ones and as long as the entire part of the filaments. *E. B.* t. 1974.

Corn-fields, waste-places, &c., not unfrequent throughout England and the south of Scotland; also near Dublin. ♃. 6. — *Stem* 1½— ft. high. *Bulbs* numerous. *Spatha* of one deciduous *leaf.* *Flowe* on longish peduncles, which are thickened upwards, few, erect, reddish, green on the keels, shorter than the *stamens*, whose *filaments*, well as the *anthers*, are protruded.

7. A. *sphærocéphalum* L. (*small round-headed G.*); umb globose without bulbs, stem leafy below, leaves subcylindric channelled above smooth fistular, spatha 2-valved short, stame twice as long as the perianth the alternate ones 3-cleft, midd point longer than the lateral ones as long as the entire part the filament, bulb accompanied by stalked offsets. *E. B.* t. 2813.

On the sands of St. Aubin's Bay, Jersey. ♃. 6, 7.

***** *Leaves broad, flat, all radical. Stamens all simple.*

8. A. *ursínum* L. (*broad-leaved G.* or *Ramsons*); umbel nearly plane, leaves ovate-lanceolate on footstalks, scape triangular. *E. B.* t. 122.

Moist woods and hedge-banks, frequent. ♃. 4—6. — *Flowers* white. *Umbels* without bulbs, level-topped. *Spatha* of 2 ovate-lanceolate *leaves.*

(*Allium ambiguum* Sm. in *Fl. Græca*, "almost exclusively confined to the south of Europe, and an old inhabitant of our gardens," we regret to see introduced into the *Supplement to English Botany* (tab. 2803) solely on the ground of its having been found, in a very suspicious locality, a little above Rochester.)

9. Scílla *Linn.* Squill.

Perianth of 6 sepals, spreading and deciduous. *Filaments* filiform, glabrous, inserted on the base of the perianth. — Flowers *blue or purple, racemose or corymbose, on a leafless scape, without a* spatha. Bracteas *membranaceous or obsolete.* — Named from σκυλλω, to *injure:* in Arabic also *âsgyl.*

1. S. *vérna* Huds. (*vernal S.*); bulb coated, raceme in a hemispherical few-flowered corymb, bracteas lanceolate obtuse as long or longer than the pedicels, leaves linear channelled. *E. B.* t. 23.

Common on the western and northern coasts of Great Britain, frequent in Orkney and Shetland. Ireland. ♃. 4, 5. — *Plant* 4—5 inches high. *Leaves* few, nearly as long as the scape. *Flowers* fragrant, deep blue. *Filaments* dilated downwards.

2. S. **bifólia* L. (*twin-leaved S.*); bulb coated, raceme lax subcorymbose, bracteas obsolete, leaves lanceolate mostly 2. *E. B.* t. 24.

A very dubious native. It exists in *Buddle's Herbarium*, and was received from the west of England by *Mr. Sims* of Norwich. ♃. 3, 4. — *Flowers* pale blue.

3. S. *autumnális* L. (*autumnal S.*); bulb coated, raceme scarcely corymbose, bracteas none, pedicels and stamens about as long as the perianth, leaves linear several. *E. B.* t. 78.

Dry pastures and rocks. Cornwall; near Bristol; Moulsey Hurst; Blackheath and Richmond, abundant; Flagpost-hill, Torquay; St. Helen's, Isle of Wight, plentiful. Jersey. ♃. 7—9. — *Flowers* pinkish-purple, in perfection before the *leaves* appear.

10. Ornithógalum *Linn.* Star of Bethlehem.

Perianth spreading, of 6 sepals, persistent. *Stam.* hypogynous, scarcely adhering to the perianth, alternately larger or dilated

at the base. *Capsules* with 3 angles and 3 furrows.—Flowe *white, racemose or corymbose, on a leafless scape.* Bracte *membranaceous.*—Named from ορνις, ορνιθος, a *bird*, and γαλ *milk.* Linnæus imagines that the roots of *O. umbellatum* a the "*Dove's Dung*," which was sold so dear at the siege Samaria, as mentioned in the 2nd book of Kings: they are sti much used for food in the Levant. (*See E. B.* t. 130.)

1. O. *Pyrenáicum* L. (*spiked S.*); racemes elongated, fil ments dilated below with a long point, peduncles equal sprea ing erect in fruit. *E. B.* t. 499.

Rare. Pastures in Somersetshire, Sussex, and Bedfordshire. ♃ 6, 7. — *Bulb* ovate. *Leaves* long, linear, acuminate, channelled. *Sca* 1½—2 ft. long. *Raceme* elongated. *Flowers* much smaller than the two following species, greenish-white.

2. O. **umbellátum* L. (*common S.*); racemes corymbose, pe duncles longer than the bracteas, filaments lanceolate subula simple. *E. B.* t. 130.

Meadows and pastures in various parts of England. Near Glasgow Kinross-shire; banks of the Jed, near the old castle of Fernihurs Jedburgh. ♃. 5, 6.— *Stem* 8—10 inches high. *Leaves* linea acuminate, grooved. *Flowers* large, few, 6—9; lower pedicles ver long, so that their flowers reach to the same height with the upp ones, thus forming a *corymb*, each having a membranous lanceola *bractea*. *Segments* of the *perianth* green, with a white margin an white within.

3. O. * *nútans* L. (*drooping S.*); flowers pendulous unilatera filaments broad membranous trifid middle point very sho bearing the anther between the two longer lateral ones. *E. B* t. 1997.

Fields and orchards, Bedfordshire, Suffolk, Derby, and Notting ham. ♃. 4, 5. — *Flowers* in a true, but lax, *raceme*, larger tha the last, and having the *filaments* of their *stamens* of a very differen structure.

**** *Fruit dry, capsular. Root bulbous. Stem more or les leafy. Peduncles (or pedicels) without membranaceou bracteas at the base, springing from the axils of tru leaves, not jointed with the flower. Sepals distinct. Ovule many in each cell.* Tulipeæ. (Gen. 11—14.)

11. GÁGEA *Salisb.* Gagea.

Perianth of 6 persistent pieces, connivent below, spreadin above, without a nectariferous fold or depression at the base *Filaments* not dilated at the base. *Anthers* erect. *Style* erect trigonal, fistulose. *Capsule* triangular. *Seeds* subglobose.— Flowers *corymbose or umbellate, yellow, with foliaceous* bracteas

—Named in honour of the late *Sir Thos. Gage*, Bart., an excellent British botanist.

1. G. *lútea* Ker (*yellow Gagea*); radical leaves 1—2 linear-lanceolate longer than the angular scape, umbel simple, bracteas linear-lanceolate longer than the umbel, leaves of the perianth obtuse, bulb ovate solitary. Ornithogalum *E. B.* t. 21.

Woods and pastures, in several parts of England and Lowlands of Scotland. 4. 3—5.— All the species of this genus are so similar, that more than one may exist in this country. The allied *G. pratensis* is equally abundant on the Continent, and is by some considered a mere variety: it has, however, each bulb composed of 3 small ones, the whole included within a common covering. In another equally common species (*G. arvensis*) the bulb is composed of 2 smaller ones.

12. Lloydia *Salisb.* Lloydia.

Perianth of 6 nearly equal, spreading, persistent pieces. *Filaments* subulate, glabrous. *Anthers* erect. *Style* erect. *Capsule* triquetrous, thin in texture. *Seeds* angled above and flat below.—Flowers *solitary or few and corymbose, white with red or green veins.* Bracteas *foliaceous.*—Named in honour of Mr. *Edward Llhwyd*, a learned antiquarian and skilful naturalist of the 17th century, who first discovered this plant in Britain.

1. L. *serotĭna* Reich. (*Mountain L.*); leaves semicylindrical, cauline ones dilated at their base, flowers mostly solitary, sepals with a transverse nectariferous plait above the base. Anthericum *L.*: *E. B.* t. 793. Phalangium *Poir.*

On the Welsh mountains, rare. Snowdon, on the elevated rocks called Trigvylchau y Clogwyn du ymhen y Gluder, Clogwyn yr Ardhu Crib y Distlh, &c.; Twll dû; near the summit of Gluder Fawr; Cwm Idwel, Caernarvonshire. 4. 6.—*Stem* 5—6 inches high. "*Flower-stalk* invested with its own sheath, and separated by an elongation of the *root* from the *leaves*, of which the most distant encloses within its fleshy base the rudiment of the plant of the following season. The plant is increased by offsets or creeping shoots with a bulb at the extremity, the point of the bulb being directed towards the parent root. *Perianth* permanent, withering; its segments nectariferous. *Stamens* not attached to the perianth, beardless. The lateral ribs at the back of the leaf are one on each side of the keel, not close to the margin of the leaf. Two-flowered specimens are very unfrequent." *W. Wilson.*

13. Túlipa *Linn.* Tulip.

Perianth campanulate, of 6 pieces, without a nectariferous depression, deciduous. *Anthers* erect. *Stigma* sessile, 3-lobed. *Capsule* trigonous. *Seeds* flat.—Flowers *usually solitary, rarely*

two on each stem.—Name: from *tolibun*, the Persian name for a *turban*, whose gay colours are similar to those of the tulip. (*Théis.*)

1. T. *sylvéstris* L. (*wild Tulip*); stem 1-flowered somewhat drooping, leaves of the perianth ovate-acuminate bearded at the extremity, stamens hairy at the base, stigma obtuse. *E. B.* t. 63.

Chalk-pits in Norfolk, Suffolk, Hertfordshire, and Middlesex; meadows near Doncaster, Yorkshire. In Scotland, near Hamilton and Brechin; and in an old quarry at Bennie Craig, near Linlithgow; Petreavie, Otterstone, and Pitcullo Castle, Fifeshire. 4. 4.—*Flowers* yellow, fragrant. *Anthers* and *pollen* yellow. *Leaves* linear-lanceolate. The *wild Tulip* increases by throwing out a long stout fibre from its *root*, at the extremity of which a *bulb* appears. Thus a new individual is planted at a considerable distance from the parent.

14. Fritillária *Linn.* Fritillary.

Perianth campanulate, of 6 pieces, each with a nectariferous depression near the base. *Anthers* attached to the *filament* above the base in front. *Style* 3-cleft at the apex. *Capsule* 3-celled, 3-valved, oblong. *Seeds* flat.—Name apparently from *fritillus*, a *dice-box*, the chequered colours in the flower resembling the board upon which the dice are thrown.

1. F. *Meleágris* L. (*common F.* or *Snake's-head*); stem single-flowered, leaves alternate linear-lanceolate, points of the perianth inflexed, nectary linear. *E. B.* t. 622.

Meadows and pastures, principally in the east and south of England. 4. 4. — Varies with white *flowers*. Specific name derived from the *Numidia Meleagris*, or *Pintado*, whose plumage is chequered in a somewhat similar manner.

(*Lilium Martagon* L. has been established in some parts of the country, and figured in *E. B. S.* t. 2799, and *L. Pyrenaicum* has been observed in hedges near Mollond, North Devon; but neither have any right to be admitted into our Flora.)

Ord. XCV. MELANTHACEÆ *R. Brown.*

Perianth petaloid, 6-partite or tubular by the cohesion of the claws of the segments, which are often rolled inward before expansion. *Stamens* 6, perigynous. *Anthers* attached below the middle, at first turned outwards, but sometimes afterwards inwards by resupination. *Ovary* free, with 3 *cells* and many *seeds*. *Style* partly or entirely divided into 3. *Stigmas* undivided. *Capsules* separable into 3 valves. *Integument* of the *seeds* neither black nor crustaceous, but membranous. *Albumen* firm, fleshy.—Root *sometimes bulbous*. Leaves *sheathing at the*

base, with parallel nerves. — Strongly narcotic, diuretic, and cathartic. Veratrine is extracted from *Veratrum Sabadilla.*

1. Colchicum. Perianth tubular, very long; limb 6-partite. Styles long.
2. Tofieldia. Perianth 6-partite. Styles short.

1. Cólchicum *Linn.* Meadow-Saffron.

Perianth tubular, very long, rising from a spatha; *limb* campanulate, 6-partite, petaloid. *Caps.* 3-celled; *cells* united at the base. — Named from *Colchis*, where it was said to grow abundantly.

1. C. *autumnále* L. (*common M.*); leaves plane broadly lanceolate erect. *E. B.* t. 133. *Var.* with late green abortive flowers. *E. B.* t. 1432.

Meadows and pastures, chiefly in the north-west of England: *Ray.* In Suffolk, Oxfordshire, Staffordshire, Cheshire, and other places. Alloa, Scotland. 4. 8—10. — The *flowers* appear in succession, rising from the *cormus*, with a very long narrow *tube*, surrounded at the base with a membranous sheath. The *stamens* are inserted on the oblong-ovate *segments* of the pale purple *perianth*. *Germen* at the base of the *cormus*, the long thread-like *styles* running up the whole length of the tube. The *leaves* and *fruit* appear in spring and are withered before summer. Its properties are said to be similar to those of the *officinal Squill*, and it has been employed as a substitute for the famous *Eau médicinale.*

2. Tofiéldia *Huds.* Scottish Asphodel.

Perianth 6-partite, having a small 3-partite *involucre*. *Stamens* glabrous. *Caps.* 3—6-celled; *cells* united at the base, many-seeded. — Named in honour of *Mr. Tofield*, an English botanist.

1. T. *palústris* Huds. (*Mountain S.*); spike ovate, stem glabrous filiform nearly leafless, petals obovate obtuse, germen 3-lobed, involucre at the base of the pedicel. *E. B.* t. 536. T. borealis *Wahl.* Anthericum calyculatum *L.*

Mountains of England, Scotland, and Ireland, in boggy places; not rare. 4. 7—8. — *Stem* 4—6 inches high. *Leaves* almost wholly radical, in fascicles, linear, sword-shaped, equitant. *Flowers* small, pale yellowish-white.

Ord. XCVI. RESTIACEÆ *R. Brown.*

Flowers capitate or spiked, bracteated, glumaceous, or white or colourless, 2—6-partite, seldom 0. *Stamens* hypogynous,

1—6; when 2 or 3, in a 4—6-divided *perianth*, opposite the inner segments of the latter. *Ovary* free, with 1 or more cells. *Ovules* solitary, pendulous. *Fruit* capsular or nucumentaceous. *Seeds* solitary, inverted. *Embryo* lenticular, within the base of a copious *albumen*.—Herbs (*and, in some species of* Eriocaulon *marsh-plants*) *or* under-shrubs. Leaves *with parallel nerves or veins simple, narrow or* 0. Stems *naked, or more usually with sheaths slit on one side.* Flowers *generally monœcious, separated by scales or bracteas.*

1. Eriocaúlon *Linn.* Pipewort.

Flowers white or colourless, collected into a compact, scaly *head.*—*Barren flowers* in the centre. *Perianth* 4—6-cleft, the *inner segments* united nearly to their summit. *Stam.* 4—6. *Anthers* 2-celled.—*Fertile flowers* in the circumference. *Perianth* deeply 4-partite. *Style* 1. *Stigmas* 2—3. *Capsule* 2—3-lobed, 2—3-celled.—Named from εριον, *wool*, and καυλος *the stem;* in allusion to the downy stems or scapes of the species first known.

1. E. *septanguláre* With. (*jointed P.*); scapes striate longer than the cellular compressed subulate glabrous leaves, flowers 4-cleft hairy at the extremities as well as the scales, stamens 4, capsule 2-celled. *E. B.* t. 733. E. pellucidum *Mich.*

Lakes in mountainous countries, rare. In Skye, Coll, and a few of the neighbouring Islands of the Hebrides. Cunnamara, N. W. of Ireland, frequent. ♃. 8.— *Roots* creeping, and throwing out innumerable, white, curiously articulated *fibres*, which penetrate deep into the mud. *Leaves* pellucid, beautifully cellular, as is the *scape*. *Head* of numerous, compact, minute *flowers;* each with an obovate membranous, concave *scale*, nearly as long as itself. *Two outer segments* of the *perianth* duplicato-carinate, purplish; *two inner* white; those of the central *sterile flowers* united for a great proportion of the length, so as to be two-lipped at the extremity; each *lip* bearing a *stamen*, and above that a black sessile *gland*, and on either side, between the two lips, a *stamen:* in the centre between these are two black, stalked glands (abortive *styles?*). In the *fertile* flowers, the 4 segments are almost equally divided to their base, the inner having a black, sessile gland at the extremity. *Pistil* shortly stipitate. *Germen* of 2 globose lobes. *Style* short. *Stigmas* 2, long, subulate.—In the *Flora Londinensis n. s.* t. 52. the sterile flower is not correctly represented as to its usual appearance; nor the situation of the *gland* which is not below, but above, the point of insertion of the *stamen*.

Ord. XCVII. JUNCACEÆ *Juss.*

Perianth 6-partite, subglumaceous (usually scarious, sometimes herbaceous and coloured internally, but at length dry

and hard), persistent: *Stamens* 6, inserted into the base of the segments, or sometimes 3, and then opposite the outer segments. *Ovary* free, imperfectly 3-celled, and many-ovuled, or 1-celled and 3-ovuled. *Style* 1. *Stigmas* usually 3, sometimes 1. *Fruit* capsular, with 3 valves, bearing the dissepiment in the middle, rarely closed and by abortion 1-seeded. *Embryo* minute, cylindrical, at the base of a hard fleshy or cartilaginous *albumen*.—Herbs. Leaves *grassy or subulate, with parallel nerves or veins, sometimes wanting*.

1. Juncus. Perianth glumaceous. Filaments glabrous. Stigmas 3. Capsule mostly 3-celled, many-seeded.
2. Luzula. Perianth glumaceous. Filament glabrous. Stigmas 3. Capsule 1-celled, 3-seeded.
3. Narthecium. Perianth coloured. Filaments hairy. Stigma 1. Capsule 3-celled at the base, many-seeded.

1. Júncus *Linn.* Rush.

Perianth of 6 leaves, glumaceous. *Filaments* glabrous. *Stigmas* 3. *Caps.* 3-celled, 3-valved; *valves* with the seed-bearing *dissepiments* in their middle. *Seeds* numerous. (Leaves *rigid, mostly rounded, rarely plane, glabrous.*) — Named from *jungo*, to *join*; the leaves and stems of this genus having been employed for cordage.

* *Leaves none. Barren scapes resembling leaves. Panicle lateral. Flowers scattered. Seeds with their coat close, not appendaged.*

1. J. *effúsus* L. (*soft R.*); scapes very faintly striate soft, "pith continuous," panicle branched, sepals spreading lanceolate nearly equal acuminate rather longer than the obovate retuse not apiculate capsule. — *α*. panicle diffuse branched. *E. B.* t. 836. — *β*. panicle more or less dense, globose.

Marshy ground, common. — *β*. Near Bath. 4. 7. — This and the next are distinguished from *J. glaucus* by their soft, pliable, almost smooth (scarcely striate) *scapes*. It is more difficult to distinguish it from *J. conglomeratus*, with which indeed E. Meyer and most foreign botanists now unite it. *Stam.* 3 or 6. — Excellent, as is the following, for platting into mats, chair-bottoms, &c. Wicks of candles are made of the pith.

2. J. *conglomerátus* L. (*common R.*); scapes very faintly striate soft, "pith continuous," panicle branched, sepals lanceolate acute nearly equal about as long as the obovate retuse apiculate capsule, stamens 3.—*α*. panicle dense, globose. *E. B.* t. 835. — *β*. panicle more or less diffuse.

Marshy ground, frequent. 4. 7. — *Panicle* usually very dense. *Scape* resembling the last, and employed for the same purposes. Sometimes only to be distinguished from the last by the apiculate capsule.

3. J. *diffúsus* Hoppe (*loose-flowered R.*); scapes finel striate rigid, "pith continuous" (or interrupted), panicl loose much branched erect, sepals lanceolate subulate longe than the obovate obtuse mucronate capsule, stamens 6. *Hopp in Sturm's Deutsch. Flora*, 77. 10.

Wet places, rare. Hertingfordbury and Hoddesdon, Herts; nea Ashby-de-la-Zouch and Twycross, Leicest.; between Guildford an Woking Railway Station, Surrey; Epping Forest (between Waltham stow and Woodford) and Halstead, Essex; Isle of Wight, and Hay ling Island, Hants. Kincardine, Scotland. ♃. 7, 8. — Of thi we have seen no British specimen: it appears to be a mere variet of the *J. glaucus*, with which indeed E. Meyer unites it, and with whic we understand it always grows intermixed in this country. Dr Bromfield considered it a hybrid between *J. glaucus* and *J. conglo meratus*, with both of which he always found it associated, and ha shown that the character taken from the pith is not absolutely to b depended upon: we doubt if it be so in any of these species.

4. J. *glaúcus* Ehrh. (*hard R.*); scapes deeply striate rigid "pith interrupted," panicle loose much branched, sepals lanceo late subulate nearly equal rather longer than the elliptic-oblong mucronate capsule, stamens 6. *E. B.* t. 665.

Wet pastures and by road-sides. ♃. 7. — *Root* creeping. *Scapes* 1—2 ft. high, glaucous, rigid, covered at the base with deep purple brown, membranaceous, shining *sheaths*. *Panicle* lax, erect. *Flower* slender, pale brown, with a broad green line down the middle of each leaflet of the perianth. *Bracteas* small and acuminate.

5. J. *Bálticus* Willd. (*Baltic Rush*); scapes very obscurely striate rigid, "pith continuous," panicle erect branched, sepals nearly equal ovate-lanceolate very acute as long as the elliptical scarcely trigonous obtuse mucronate capsule, stamens 6. *E. B. S.* t. 2621. J. arcticus *Hook in Fl. Lond.* t. 151 (not *Willd.*)

Sandy sea-shores in Scotland. Near Dundee; *Mr. T. Drummond.* Farr, and Cape Wrath, Sutherland; *Dr. Graham:* Aberdeenshire: Stottfield, 6 m. from Elgin, between Findhorn and Spey, on the banks of the Lossie, 7 m. from the sea; and also at St. Andrew's and Lang bride, near Elgin, where the sea formerly reached. ♃. 7. — This comes very near the true *J. arcticus;* it is, however, assuredly the *J. Bal ticus* of Willdenow, and differs from *J. arcticus* in its much taller and more rigid *scapes*, larger and decidedly branched *panicle*, and rounded, not trigonous, *capsules*. Both have exceedingly creeping *roots*, more so than any other species we are acquainted with. *Flowers* dark brown, with a pale line down the centre of each segment.

6. J. *filifórmis* L. (*Thread Rush*); scapes filiform faintly striate, panicle simple of few flowers from near the middle of the scape, sepals lanceolate acuminate nearly equal larger than the roundish-obovate obtuse mucronate capsule, stamens 6. *E. B.* t. 1175.

Stony margins of lakes in Cumberland, Westmoreland, and Lancashire. Ben-Lawers, and several parts of Scotland; but I have never seen Scottish specimens. ♃. 7, 8. — *Root* creeping. *Plant* remarkable for its slender *scapes*, extended greatly beyond the *panicle*, its pale greenish *flowers* and short *capsules*.

** *Leaves none. Barren scapes resembling leaves. Panicle terminal. Flowers aggregated. Stamens 6. Seeds with a loose coat forming an appendage at each end.*

7. J. *marítimus* Sm. (*lesser sharp Sea R.*); barren scapes and outer bracteas pungent, panicle compound erect, clusters 4—8-flowered, sepals equal lanceolate acute as long as the elliptical mucronated capsule. *E. B.* t. 1725. J. acutus β. *L.*

Salt marshes in various parts of England, but not frequent. St. Andrew's, Scotland. Coast of Ayrshire. Kingstown and other places in Ireland. ♃. 7, 8. — "The white base of the scapes is extremely clammy and emits a fragrant odour resembling cedar-wood. *Bromf.* In this and the following, the outer *bractea*, or portion that rises above the panicle, is broad and membranous at the base and less like a continuation of the scape than in the species of the preceding division.

8. J. *acútus* L. (*great sharp Sea R.*); barren scapes and outer bracteas pungent, panicle very compound mostly compact, clusters 2—4-flowered, sepals equal about half as long as the broadly ovate suddenly acuminated capsule, interior 3 with a broad membranaceous border at the apex. *E. B.* t. 1614.

Sandy sea-shores, principally on the south and west of England and Wales. Norfolk. Wicklow and Arklow, Ireland. ♃. 7. — Larger and stouter than the last, especially the *capsules*, which are of considerable size, much protruded, rich brown and glossy.

*** *Stems leafy. Leaves rounded or subcompressed and usually distinctly jointed internally. Panicle terminal. Flowers aggregated or fascicled. Seeds without an appendage at the ends.*

9. J. *acutiflórus* Ehrh. (*sharp-flowered jointed R.*); stem and leaves subcompressed, panicle very compound pyramidal, clusters 5—6-flowered, leaflets of the perianth unequal lanceolate very acute nearly as long as the narrow ovate subacuminate (pale brown) capsule. *E. B.* t. 2143. J. articulatus *E. B.* t. 238.

Bogs, very common. ♃. 6—8. — *Stem* 1—2 feet high, erect. *Leaves* 3—4 on a stem, distinctly nodoso-articulate when dry. *Panicle* diffuse, in fruit spreading. *Flowers* several together, greenish-brown. *General bracteas* short, membranaceous, scarcely leafy. *Capsules* pale-coloured.

10. J. *nirgitéllus* D. Don (*black-headed jointed R.*); stem and leaves somewhat rounded, panicle slightly compound erect,

sepals acute shorter than the linear oblong trigonous rostrate capsule, interior 3 rather longer and broader. *E. B. S.* t. 2643.

Marshy spots on the mountains of Clova, Forfarshire. ♃. 7, 8. — Similar to the next, but the sepals are decidedly acute. *Capsule* at length black and glossy, larger and more suddenly pointed than in *J. lamprocarpus*, of which however we still incline to think it only a variety.

11. J. *lamprocárpus* Ehrh. (*shining-fruited jointed R.*); stem ascending and as well as the leaves compressed, panicle repeatedly compound erect or somewhat spreading, clusters 4—6- or 8-flowered, sepals equal the ends obtuse shorter than the acute triquetrous oblong-lanceolate (dark brown) capsule, interior 3 obtuse. *E. B.* t. 2143.

Boggy grounds and watery places, frequent. ♃. 7, 8. — *Capsules* dark brown and shining.

12. J. *obtusiflórus* Ehrh. (*blunt-flowered jointed R.*); stem and leaves erect rounded, panicle very compound spreading and divaricated, clusters 3—6-flowered, sepals equal obtuse about equal in length with the ovate-acute trigonous (pale brown) capsule. *E. B.* t. 2143.

Wet pastures and marshes, not unfrequent. ♃. 8. — Distinct as this species assuredly is, it has very frequently been confounded with the preceding ones of this division.

13. J. *uliginósus* Sibth. (*lesser Bog jointed R.*) stem erect and often swollen at the base or decumbent and rooting, leaves bristle-shaped slightly grooved faintly jointed internally, panicle nearly simple irregular, clusters few or many-flowered, sepals equal oblong nearly as long as the elliptical very obtuse mucronate (pale brown) capsule, outer 3 acute, inner ones rather obtuse. *E. B.* t. 801. J. bulbosus *L.* J. subverticillatus *Wulf.* J. supinus *Mœnch.*

Boggy and swampy places, and often partly floating in shallow water. ♃. 6—8. — A highly variable plant, depending much for its appearance on soil and situation. In rather dry places it often rises erect, 3—4 inches high, having a bulbous or swollen base, and is then the original J. *bulbosus* L. At other times the *stems* are spreading or procumbent, when it becomes the *J. subverticillatus* of Wulfen. Again, these procumbent stems often take root at intervals, and are proliferous; or, when growing in water, they float upon the surface and spread their long flaccid branches in all directions. The ramifications and panicles are exceedingly irregular; the latter few-flowered. It is often extremely difficult to distinguish this from small varieties of *J. lamprocarpus*.

**** *Stems leafy. Leaves plane or grooved above; not distinctly jointed.*

† *Seeds with an appendage at each end.*

14. J. *castáneus* Sm. (*clustered Alpine R.*); stem rounded 2—3-leaved, leaves hollow grooved above rounded at the back, heads of flowers terminal generally single sessile or peduncled shorter than the bractea, capsules ovate-oblong pointed bluntly trigonal nearly twice as long as the elliptic-lanceolate acute sepals. *E. B.* t. 90.

Rare. Elevated mountains of Breadalbane; rocks at the head of Glen Callader, in Braemar. In the county of Durham. ♃. 7, 8. — "*Root* slightly creeping, with short runners or lateral shoots. *Stem* hollow. *Leaves* with the channelled side very thin and membranaceous; and within are found distant transverse partitions. Upper part of the leaf rounded and compressed. *Sepals* 3-ribbed. *Style* breaking off at a joint. *Capsule* shining, and as well as the perianth and inner bractea of a deep chocolate colour:" *W. Wilson.*

15. J. *trífidus* L. (*three-leaved R.*); stem 1-leafed, sheaths fringed those of the base of the stem leafless, bracteas 2 resembling the setaceous solitary stem-leaf, heads of about three terminal flowers, capsule rounded-elliptical beaked longer than the acute sepals. *E. B.* t. 1482.

Rocky places on the Highland mountains of Scotland. ♃. 7, 8. — Very unlike any other British *Juncus*. *Root* creeping. Lower *sheaths* with at most a short awn, scarcely to be termed a leaf. A solitary *leaf* is on the stem, generally near the summit, 2—3 inches long, linear, setaceous. *Capsule* with a furrowed beak.

†† *Seedswithout an appendage.*

16. J. *compréssus* Jacq. (*round-fruited R.*); stem erect more or less compressed, leaves linear-setaceous grooved, panicle terminal compound subcymose, capsules roundish-ovate or oval mucronate equal to or longer than the oval-oblong obtuse incurved sepals. — *α.* panicle usually shorter than the bractea, perianth shorter than the roundish-ovate shortly mucronate capsule. J. bulbosus *E. B.* t. 934.—*β.* panicle usually longer than the bractea, perianth as long as the oval-oblong strongly mucronate capsule. J. cœnosus *Bich.: E. B. S.* t. 2680. J. Gerardi *Loisel.* J. Bothnicus *Wahl.*

Wet marshy places, common. — *β.* In salt-marshes. ♃. 6—8. — Having seen various specimens of both varieties, we feel confirmed in our opinion that they are merely extremes of the same species; indeed La Harpe, although he retains both, allows that there are many specimens so intermediate that it is impossible to say to which to refer them. We believe that in Scotland it has never been found, except in the vicinity of the sea.

17. J. * *ténuis* Willd. (*slender spreading R.*); stem above shortly dichotomous panicled, leaves linear setaceous grooved, flowers solitary unilateral approximate mostly sessile, capsules broadly elliptical obtuse mucronate shorter than the ovate-lanceolate very acuminate leaflets of the perianth. J. gracilis *E. B.* t. 2174. J. Gesneri *Sm.: E. Fl.* ii. p. 167. J. Smithii *Kunth.*

Moist mountains of Clova; *G. Don.* ♃. 7. — We have specimens from Don's garden at Forfar, but we doubt much if the roots were found in Clova. It is a common N. American species, and has been long in cultivation in this country and on the Continent: it is said to grow in Belgium, but we fear it is there only the outcast of a garden; specimens have, however, been sent us from various parts of Europe, although scarcely noticed in any botanical work as a native of the Continent. It is allied to *J. bufonius*, yet really distinct. *Radical leaves* several; *stem* bare of leaves up to the division near the top, where is one leaf immediately beneath the foliaceous *bracteas*. In the axils of the forks are 2 or 3 large, nearly sessile *flowers*, and 2 or 3 unilateral ones on the branches. The *capsule* is very different from that of the following species.

18. J. *bufónius* L. (*Toad R.*); stem dichotomous above panicled, leaves filiform setaceous grooved, flowers solitary unilateral mostly sessile, capsules oblong obtuse much shorter than the very acuminate leaflets of the perianth. *E. B.* t. 802.

Frequent in moist watery places, especially such as have been overflowed in winter. ☉. 8. — *Stem* 4—6 inches high. *Leaves* few, slender, only one on the stem, generally near the middle. The divisions or ramifications of the *stem*, as they are called, belong more properly to the panicle, at the base of which are foliaceous *bracteas*. Whole plant very pale coloured. *Flowers* green, with white membranous margins to the *leaflets* of the *perianth*.

***** *Leaves all radical. Flowers terminal.*

† *Seeds without an appendage.*

19. J. *squarrósus* L. (*Heath R.*); leaves setaceous rigid grooved, panicle terminal elongated compound, capsules elliptical-ovate. *E. B.* t. 933.

Moory and heathy ground abundant. ♃. 6, 7. — Whole plant exceedingly rigid, 6 inches to 1 foot high. *Leaves* subsecund, about half as long as the *scape*. *Bracteas* lanceolate, membranaceous. *Leaflets* of the *perianth* ovate-lanceolate, glossy brown with a pale line down the middle, scariose at the edges. *Capsule*, as in almost all this genus, tipped with a short mucro, the remains of the *style*, palish-brown.

20. J. *capitátus* Weigelt. (*capitate R.*); leaves filiform (soft) plane or grooved above, heads of flowers sessile terminal shorter than the setaceous bractea, sepals ovate-lanceolate

acuminate-aristate twice as long as the truncate shortly mucronate capsule. *Hook. in E. B. S.* t. 2644. J. supinus *Bich.* J. ericetorum *DC.* β. γ.

Jersey: *Mr. Hudson.* ⊙. 5—7. — *Plant* 2—4 inches high, flaccid. *Leaves* entirely radical, about half the length of the *scape*, erect. *Heads* rather large in proportion to the size of the plant, of 3—6 sessile *flowers*, occasionally proliferous. *Stamens* usually 3, sometimes 6. This species is well distinguished by the setaceous inclined *bractea* (with its sheathing membranaceous base), which is longer than the heads of flowers, and by the acuminate-aristate *perianth*.

†† *Seeds with an appendage at each end.*

21. J. *biglúmis* L. (*two-flowered R.*); leaves linear-subulate compressed (not channelled) gradually dilated into the sheathing base, flowers 2 unilateral, one of them stalked mostly shorter than the foliaceous involucre, capsule turbinate retuse rather longer than the obtuse leaves of the perianth. *E. B.* t. 898.

Boggy places on the Highland mountains, not unfrequent on the Breadalbane range, but rare in other parts of Scotland. 4. 7, 8. — *Root* fibrous. *Stem* 2—4 inches high, growing not in tufts, but scattered: a much rarer species than the following, small specimens of which have often been mistaken for it. "*Leaves* with distant transverse partitions within, but not longitudinally divided:" *Mr. W. Wilson.*

22. J. *triglúmis* L. (*three-flowered R.*); leaves linear-subulate channelled bitubular their sheaths auricled above, flowers mostly 3 generally as long as the membranaceous bractea, capsule elliptical acute longer than the rather obtuse leaflets of the perianth. *E. B.* t. 899.

Boggy places among the mountains in the north of England, Wales, and especially the Highlands of Scotland. 4. 7, 8. — Mr. W. Wilson has well studied, in living plants, the character of this and the preceding species of Rush. "*Stems*," he says, of this plant, "several from the same root, perfectly rounded, not channelled on one side, as in *J. biglumis*, naked above, and generally with 2, and sometimes 3 leaves near the base. *Leaves* with dilated sheaths, which are auricled at the top, setaceous, channelled, *bitubular*, with transverse partitions; *radical leaves* also setaceous, more slender and longer than in *J. biglumis*. Sometimes 4 *flowers* are found together, the additional ones placed lower down and separated from the rest. Outer *bractea* sometimes as large as in *J. biglumis:* each flower has one bractea at its base. *Sepals* more membranous than in the last, narrower and more acute. *Capsule* longer than the calyx, with a tapering rather acute extremity, and with indistinctly furrowed sides; colour almost black." *W. Wilson.*

2. Lúzula *De Cand.* Wood-rush.

Perianth of 6 leaves, glumaceous. *Filaments* glabrous. *Stigmas* 3. *Caps.* 1-celled, 3-valved; *valves* without dissepiments. *Seeds* 3, at the bottom of the capsule. (*Leaves soft, plane, generally hairy.*) — Name: the *Gramen Luzulæ* of Bauhin. *Luzula*, Smith tells us, is altered from *lucciola*, or *luzziola*, a *glow-worm;* because the heads of flowers, wet with dew and sparkling by moonlight, gave the elegant Italians an idea of those brilliant insects. Hence the learned author of the *English Flora* contends for *Luciola* as the proper orthography.

1. L. *sylvática* Bich. (*great hairy W.*); leaves hairy, panicle subcymose doubly compound, peduncles elongated of about 3 fascicled flowers, leaflets of the perianth aristate as long as the ovate mucronate capsule, seed minutely tubercled at the end, filaments very short. L. maxima *DC.* Juncus sylvaticus *Huds.: E. B.* t. 737. J. pilosus δ. *L.*

Woods, hilly places, and upon the mountains, frequent. ♃. 5, 6. *Stem* 1—1½ ft. high. *Leaves* broad, shining, striate. *Floral bracteæ* ciliated. *Caps.* with a very sharp point, deep brown. *Seeds* elliptic-ovate, with scarcely any crested appendage on the top.

2. L. *pilósa* Willd. (*broad-leaved hairy W.*); cæspitose or stoloniferous, leaves hairy, panicle subcymose but little branched spreading, peduncles 1—3-flowered bent back when in fruit, sepals acuminate rather shorter than the retuse capsule, its valves truncate, recent seeds with a long hooked appendage at the top, filaments flattened about half the length of the anthers. Juncus *L.: E. B.* t. 736.

Woods, frequent. ♃. 3—5. — Much smaller than the last, with the *flowers* standing singly on the *panicle*, dark brown. *Capsule* broadly ovate, contracted below the summit where it is so retuse as to appear truncate. Appendage of the seeds hooked and recurved at the point.

3. L. *Fórsteri* DC. (*narrow-leaved hairy W.*); cæspitose, leaves hairy, panicle subcymose subtended by a narrow linear bractea but little branched contracted, peduncles 1-flowered nearly all erect, sepals narrow acuminate a little longer than the acute capsule, its valves acute or acuminate, recent seeds with a straight obtuse appendage at the top, filaments compressed ascending about as long as or slightly shorter than the anther. Juncus *E. B.* t. 1293.

Groves and thickets, especially on a calcareous or gravelly soil. More common in Surrey and Isle of Wight than *L. pilosa.* About Forfar, and banks of the Doune, Ayrshire. ♃. 3—6. — Much slenderer than the last in every part and taller. *Seed* with a large oblong crested appendage on the top. — Somewhat intermediate between this and the last, but apparently different from both, is a plant

found in the Isle of Wight, Sussex, and Herefordshire, which seems never to perfect its seeds: although larger and in some places more abundant than either, it seems to be a hybrid; the late Dr. Bromfield proposed to call it *L. Borreri*, and, if a species, may be characterised thus: — *Leaves* hairy; *panicle* subcymose, slightly branched, oblong, with long narrow acuminate bract at its base; *peduncles* 1—2-flowered, nearly all erect; *sepals* acuminate, much longer than the (unripe) capsule, its valves acute; *seeds* with a "straight blunt appendage or crest:" *Bromf.*

4. L. *campéstris* Br. (*Field W.*) leaves hairy, spikes dense somewhat umbellate or contracted into a rounded lobed head, leaflets of the perianth acuminate longer than the obtuse apiculate capsule, seeds with a short conical stalk-like appendage at the base. Juncus *L.* — *α.* filaments about 6 times shorter than the anther, seeds nearly globose. Juncus *E. B.* t. 672. — *β.* taller, filaments from half as long to as long as the anther, seeds twice as long as broad. L. congesta *Lej.*: *E. B. S.* t. 2718. L. multiflora *Koch.*

Woods and dry pastures, frequent; *α.* and *β.* growing together. ♃. 4, 5. — *Stem* 4—6 or 8 inches, or even one foot or more high. *Flowers* collected into ovate or oblong nearly erect *spikes*, of a reddish-brown colour, sometimes very pale. In *β.* the *spikes* are often nearly all sessile: De Candolle, whom Smith quotes as the authority for considering this a distinct species, himself now, in the *Bot. Gallicum*, makes it a *var.* of *campestris*; indeed we find various intermediate states. Even the *L. Sudetica* of DC. will probably prove not permanently distinct from *campestris*; all of them are united by Kunth, En. iii. p. 308.

5. L. *arcuáta* Hook. (*curved Mountain W.*); leaves channelled hairy, panicle subumbellate of few 3—5-flowered heads with long drooping peduncles, bracteas membranous fringed, capsule ovate-globose apiculate shorter than the broadly lanceolate mucronate-aristate sepals, filaments as long as the anthers. *E. B. S.* t. 2688.

On the barren stony summits of the great Cairngorm range of mountains. Upon Founiven, a high mountain in Sutherland, and in Assynt. ♃. 7. — The smallest of our *Luzulæ* and one of the rarest and most distinct. It comes nearer Mr. Brown's *L. hyperborea* than any other, but that wants the curved peduncles. *Seeds* without an appendage at the top, and with scarcely any at the base.

6. L. *spicáta* DC. (*spiked Mountain W.*); leaves somewhat channelled, spike solitary drooping compound, spikelets shorter than their subdiaphanous mucronate bracteas, sepals narrow mucronate-aristate about as long as the rounded apiculate capsule, filaments nearly as long as the anthers. Juncus *L.*: *E. B.* t. 1176.

High mountains in the north of England, and more abundantly in

Scotland. 4. 7. — *Stem* 7—8 inches high, slender. *Leaves* small, narrow, hairy only at the margins of the *sheaths*. *Spike* dark-coloured, interrupted near the base. *Capsule* very dark, shining brown. Well distinguished by its drooping compound spike and narrow leaves.

3. Narthécium *Huds.* Bog-Asphodel.

Perianth coloured, of 6 linear-lanceolate, spreading, at length connivent sepals. *Stam.* woolly. *Germen* pyramidal. *Stigma* entire. *Caps.* 3-celled, at the base 3-valved. *Seeds* numerous, with an appendage at each extremity.—Named from *ναρθηξ*, a *rod;* probably from the elongated straight raceme of flowers. It is remarkable that this word is an anagram of *Anthericum*, a genus with which Linnæus had united it.

1. N. *ossífragum* Huds. (*Lancashire B.*); leaves linear uniform, pedicels with bracteas above the middle, stamens much shorter than the perianth. *E. B.* t. 535.

Wet places, in moors and mountains, frequent. 4. 7, 8. — *Stem* 6—8 inches high, decumbent at the base. *Roots* creeping. *Leaves* all radical, uniform, equitant, striate, about $\frac{1}{2}$ as long as the *scape*, which has many scales or bracteas. *Stamens* considerably shorter than the *perianth*. *Seeds* with a very long *arillus* forming an appendage to each extremity, attached to a longitudinal receptacle on each valve: the *receptacles* form the dissepiments.

** *Perianth conspicuous; three inner or all the sepals much developed and petaloid. Albumen wanting. Aquatic or marshy plants with the nerves of the leaves longitudinal.* (Ord. XCVIII. XCIX.)

Ord. XCVIII. BUTOMACEÆ *Rich.*

Perianth of 6 pieces, the 3 inner petaloid. *Stamens* definite or indefinite, hypogynous. *Ovaries* 3 or 6, or more, superior, distinct or united. *Ovules* numerous in each cell or carpel. *Stigmas* as many as ovaries, simple. *Follicles* several, either distinct and rostrate, or united into one. *Seeds* minute, numerous, attached to a reticulated receptacle, covering the whole inner surface of the cell. *Albumen* 0.—Aquatics. Leaves *very cellular*. Flowers *umbellate*, handsome.

1. Bútomus *Linn.* Flowering-rush.

Perianth single, coloured, 6-partite, inferior. *Stamens* 9, 6 in an outer, 3 in an inner row. *Capsules* 6, many-seeded. *Seeds* longitudinally striate.—Named from *βους*, an *ox*, and *τεμνω to cut;* because the sharp leaves injure the mouths of cattle that browse upon them.

1. B. *umbellátus* L. (*common F.*); leaves linear-subulate trigonous, spatha of 3 leaves. *E. B.* t. 651.

Ditches and ponds, frequent in England and Ireland. Duddingston Loch, and Loch of Clunie, Scotland, but only where it has been planted. 4. 6, 7. — *Rhizoma* white. *Leaves* all radical, 2—3 feet long, linear, acuminate, acutely trigonous, more or less spirally twisted at the extremity. *Scape* longer than the *leaves*, rounded. *Umbel* of many rose-coloured *flowers*, on *pedicels* about 4 inches long, with scariose sheathing *bracteas* at the base, and these having a triphyllous membranous *spatha* or involucre beneath them. *Germens* ovate, compressed, rostrate. *Style* about as long as the germen, recurved at the apex; *stigma* lateral. *Seeds* parietal, or fixed to the inner surface of the pericarp, extremely small. A highly ornamental plant.

Ord. XCIX. ALISMACEÆ *R. Brown.*

Perianth of 6 pieces; 3 outer *sepals* herbaceous, 3 inner petaloid. *Stamens* hypogynous. *Ovaries* several, superior, distinct or slightly united at the base, each 1-celled. *Ovules* solitary, or 2 superposed, attached to the inner angle of the carpel. *Pericarps* indehiscent. *Seeds* solitary, or 2 attached to the suture at a distance from each other, erect or ascending. *Albumen* 0. *Embryo* undivided, curved like a horse-shoe, with the same direction as the seed. — Aquatics. Leaves *radical on long stalks.*

1. Actinocarpus. Flowers perfect. Stam. 6. Carpels 6—8, spreading, each 2-seeded.
2. Alisma. Flowers perfect. Stam. 6. Carpels numerous, each 1-seeded.
3. Sagittaria. Flowers monœcious. Stam. numerous. Carpels numerous, each 1-seeded.

1. Actinocárpus *Br.* Star-fruit.

Flowers perfect. *Stamens* 6. *Styles* 6—8. *Capsules* indehiscent, combined at the base, spreading in a radiated manner, 2-seeded. — Named from ακτις, a *ray*, and καρπος, a *fruit*; in reference to its curiously radiated fruit, resembling a *star-fish.*

1. A. *Damasónium* Br. (*common S.*); capsules 6 subulate compressed opening longitudinally, leaves 5-nerved. Alisma Damasonium *L.*: *E. B.* t. 1615.

Ditches and pools, mostly on a gravelly soil, and chiefly in the middle and south-eastern counties of England. 4. 6, 7. — *Leaves* radical, on long *petioles*, floating, elliptical. *Scapes* with a terminal

umbel, generally proliferous. *Petals* white, very delicate, obcordate, each having a yellow spot at the base. *Capsules* with two *seeds* upon evident stalks, one from the upper angle, horizontal, the other from the lower angle of the axis, erect, oblong, tubercled, and transversely striated, compressed, with a deep furrow on each side, occasioned by the form of the *embryo* within, which is cylindrical, and bent double, somewhat like a horse-shoe.

2. Alísma *Linn.* Water-Plantain.

Flowers perfect. *Stamens* 6. *Styles* numerous. *Achenes* many in a *head*, distinct, one-seeded.—Named from *alis*, *water*, in Celtic. The genus is altogether aquatic.

1. A. *Plantágo* L. (*greater Water-Plantain*); leaves all radical cordate-ovate or lanceolate, scape panicled with whorled compound branches, fruit depressed, achenes obtuse with a small rib on the back.—*α*. leaves broader more or less ovate. *E. B.* t. 837.—*β*. leaves lanceolate tapering below. A. lanceolata *With.*

Near the margins of lakes, rivers, and ditches, frequent. ♃. 6—8. *Plant* 2—3 feet high. *Leaves* on long stalks. *Scape* branched upwards; *branches* bracteate; *flowers* of a pale rose-colour.

2. A. *nátans* L. (*floating Water-Plantain*); radical leaves linear acuminate sessile, floating ones elliptical obtuse, stem floating and rooting leafy, peduncles simple from the joints of the stem. *E. B.* t. 775.

Lakes in North Wales and Cumberland. Very rare in Scotland: Black Loch, 6 miles from Stranraer. On Howth and in Cunnamara, Ireland. ♃. 7, 8.—At the base of the plant are long, linear-lanceolate, membranous *scales*, or *root-leaves* reduced to mere *petioles*. *Stem-leaves* floating, on long stalks, scarcely nerved. *Achenes* obliquely oblong, compressed at the side, with many striæ, slightly spreading, pointed with the short persistent *style*.

3. A. *ranunculoídes* L. (*lesser W.*); leaves all radical linear-lanceolate, scape with simple branches in 1 or 2 whorls, fruit globose squarrose, achenes obliquely ovate acute 5-angled.—*α*. erect. *E. B.* t. 326.—*β*. plant procumbent, umbels rooting and leafy. A. repens "*Davies Welsh Bot.* 36;" *E. B. S.* t. 2722.

Ditches and turfy bogs, not unfrequent in England, Scotland, and Ireland.—*β*. In lakes, North Wales. ♃. 5—9.—"Entire plant diffusing when bruised the odour of *Eryngium fœtidum*, but weaker." *Bromf.* In general appearance most allied to *A. plantago*, especially the narrow-leaved variety of that plant, but much smaller, with larger *flowers*, which are pale-coloured, and arranged in often proliferous *umbels*. The most essential character is to be found in the *germen* and *fruit*. The *var. β.* at first appears to be very different, having runners, and the flowers are solitary on long simple

radical peduncles; but these runners are the true scapes, the umbels having taken root, and thrown out a few leaves.

3. Sagittária *Linn.* Arrow-head.

Monœcious. — *Barren fl. Stam.* numerous. — *Fertile fl. Styles* many. *Achenes* very numerous, distinct, collected into a *head*, 1-seeded, compressed, margined. — Named from *sagitta*, an *arrow*, on account of the shape of its leaves.

1. S. *sagittifólia* L. (*common A.*); leaves arrow-shaped, the lobes lanceolate straight, scapes simple with whorled simple short branches. *E. B.* t. 84.

Ditches and margins of rivers in England and Ireland. Near Glasgow, but scarcely indigenous. 4. 7—9. — A beautiful aquatic, with large truly arrow-shaped *leaves*, rising above the surface of the water.

*** *Perianth none or inconspicuous. Nerves of leaves usually longitudinal.* (Ord. C.—CV.)

† *Plants sometimes, though rarely, aquatic, never* (*except* Sparganium natans) *submerged or floating.* (Ord. C.—CIII.)

Ord. C. JUNCAGINACEÆ *Rich.*[1]

Flowers perfect, lower ones or all stalked or reflexed. *Perianth* uniform, rarely none, sometimes coloured but scarcely petaloid. *Stamens* hypogynous. *Anthers* turned outwards. *Ovaries* superior, united or distinct. *Ovules* solitary or two, approximate at the base, erect. *Styles* or *stigmas* 3—6. *Pericarps* indehiscent or 2-valved. *Embryo* without (or? very rarely in the axis of mealy) *albumen*, having the same direction as the *seed*, with a lateral cleft for the emission of the *plumule*. —Marsh Herbs, *with narrow radical leaves.* Flowers *spiked or racemed.*

1. Triglochin. Anthers almost sessile. Ovary 1, 3—6-celled. Flowers in a straight naked spike or raceme.
2. Scheuchzeria. Anthers on a slender filament. Ovaries 3. Flowers in a flexuose bracteated raceme.

1. Triglóchin *Linn.* Arrow-grass.

Perianth of 6, erect, concave, deciduous leaves, 3 outer, and 3 inner inserted a little higher than the others. *Stamens* 6,

[1] This Order, small though it be, requires revision as to its limits, and ought perhaps to be confined to *Triglochin* and *Tetroncium*, in which case the spur-fruited species of *Triglochin* may form a third genus. The Order might then be called *Triglochinaceæ*, and the name *Juncaginaceæ* be abolished as liable to be confounded in sound with *Juncaceæ*.

inserted near the base of the sepals : *anthers* almost sessile. *Ovaries* 3—6-celled. *Stigmas* 3—6, sessile, plumose. *Capsules* 3—6, 1-seeded, united by a longitudinal *receptacle*, from which they usually separate at the base. *Albumen* 0.—Flowers *in a naked straight spike or raceme.*—Named from τρεις, *three*, and γλωχις, a *point;* from the three points or valves of the capsules in the common species.

1. T. *palústre* L. (*Marsh A.*); fruit 3-celled nearly linear. *E. B.* t. 366.

Wet meadows, and by the sides of rivers and ditches in marshy situations, plentiful. ♃. 6—8.—*Leaves* all radical, linear, fleshy, slightly grooved on the upper side, sheathing and membranous at the base. *Scape* 8—10 inches high, terminating in a lax, simple *spike* or *raceme*. *Flowers* small, greenish. *Capsules* 3, linear, united by a common receptacle, so as to form a solitary 3-celled *fruit*, each cell separating at its base, and suspended by the extremity, containing one *seed*, and not dehiscent.—Mr. W. Wilson finds that the leaves, when bruised, yield a very fetid smell, and that the root, under certain circumstances at least, is a creeping one, sending out jointed scaly runners, with comparatively large, ovate, shortly acuminated *bulbs* at the extremity : these bulbs, at the end of the jointed runners, have very much the appearance of a scorpion's tail.

2. T. *marítimum* L. (*Sea-side A.*); fruit 6-celled ovate. *E. B.* t. 255.

Salt-marshes, not unfrequent. ♃. 5—9.—Larger than the last and stouter, differing essentially in its fructification, which is formed of 6 combined *capsules*, constituting a broadly ovate *fruit*, not separating and suspended by their summits, as in T. *palustre*. Even when in flower, the same form is observable in the germen as afterwards in the fruit.

2. Scheuchzéria *Linn.* Scheuchzeria.

Perianth single, somewhat petaloid, of 6 reflexed leaves; the inner ones narrower. *Stamens* 6. *Filaments* slender. *Anthers* erect, elongated. *Ovaries* 3. *Stigmas* sessile, papillose. *Capsules* 3, inflated, 2-valved, 1—2-seeded. *Albumen* 0.—Flowers *racemed with a bractea at the base of their stalks.*—Named in honour of the three *Scheuchzers*, Swiss botanists.

1. S. *palústris* L. (*Marsh S.*) *E. B.* t. 1801.

In a marsh at Lakeby Car, near Boroughbridge; Thorne Moor, near Doncaster; Bomerepool, near Shrewsbury. Methven, near Perth. ♃. 7.—A singular and very rare plant, having few semicylindrical, slender, rush-like *leaves;* and a *scape* with large *bracteas*, terminated by a *raceme* of greenish *flowers*. *Perianth* and *stamens* reflexed. *Germens* 3, ovate, obtuse, with lateral, linear, downy *stigmas*. *Capsules* singularly inflated.

Ord. CI. TYPHACEÆ *Juss.*

Flowers monœcious, numerous and very closely arranged upon a cylindrical or spherical *spadix* without a *spatha*. *Perianth* of 3 or more mere scales, or wanting and replaced by hairs. *Barren fl. Stamens* 1—6. *Filaments* capillary, distinct or united. *Anthers* erect. — *Fertile fl. Ovary* solitary, superior, 1-celled, containing one solitary pendulous *ovule*. *Style* short. *Stigma* simple, unilateral. *Fruit* somewhat dry or spongy, drupaceous, indehiscent, 1-celled, at length angular by mutual pressure. *Seed* solitary, pendulous, with a membranous skin adhering to the pericarp. *Embryo* in the axis of mealy *albumen*, straight, with a cleft on one side containing the *plumule*. *Radicle* next the *hilum*. — Herbaceous *plants*, *growing in marshes or ditches*. Stems *without nodes*. Leaves *rigid*, *ensiform*, *with parallel veins*.

1. Typha. Spadix cylindrical.
2. Sparganium. Spadix spherical.

1. Typha *Linn.* Cat's-tail, or Reed-mace.

Spadix cylindrical. *Perianth* 0, except hairs. — *Barren fl. Stam.* 1, or 2—6 and monadelphous, surrounded at the base with 3 or more hairs (sterile filaments?): *anthers* somewhat wedge-shaped. — *Fertile fl. Pericarp* stalked; the stalk with hairs, either whorled or at its base (sterile filaments?). — Named from τυφος, a *marsh*, where these plants grow.

1. T. *latifólia* L. (*great R.*); leaves linear nearly plane glaucous, sterile and fertile spikes continuous, both cylindrical. *E. B.* t. 1455.

Borders of ponds and lakes. ♃. 7, 8. — *Stems* 3—6 feet high. *Leaves* very long, sometimes nearly an inch broad. *Spikes* very long, close together; *fertile one* greenish-brown; *sterile one* yellow, with one or two large membranaceous *bracteas*.

2. T. *angustifólia* L. (*lesser R.*); leaves linear grooved below green, sterile and fertile spikes a little distant from each other both cylindrical. *E. B.* t. 1456.

Pools and ditches, less frequent than the preceding. About London; not uncommon in the E. of England, as Norfolk, Suffolk, and Essex. Loch of Lindore, Fife. ♃. 7. — Smaller than the last, with much narrower *leaves* and *catkins*.

3. T. **minor* Sm. (*dwarf R.*); leaves linear setaceous, barren and fertile spikes distant or contiguous the latter elliptical. *E. B.* t. 1457. T. minima *Willd.* T. angustifolia β. *Linn.*

Said, by Dillenius, to have been found by *Mr. Dandridge* on Hounslow Heath. ♃. 7.

2. Spargánium *Linn.* Bur-reed.

Spadix spherical. *Perianth* of 3 scales, which are broader upwards (sterile stamens?). — *Barren fl.* *Stamens* 3, distinct, or nearly so: *anthers* ovate. — *Fertile fl.* *Pericarp* without hairs at the base. — Name: σπαργανον, a *little band*, from its narrow and long leaves.

1. S. *ramósum* Huds. (*branched B.*); leaves triangular at the base their sides concave, common flowerstalk branched, stigma linear, fruit sessile. *E. B.* t. 744. S. erectum *L.*

Banks of ditches, lakes and stagnant waters. ♃. 7. — *Stem* 2 feet and more high, with a few long, sword-shaped *leaves* or *bracteas*, having broad membranous sheathing bases on the upper or branching part. *Root-leaves* very long, linear, ensiform, triangular at the base, their sides concave. Lower *branches* of the inflorescence with several rather distant *heads*, of which 1—3 of the lower ones are composed of fertile, the others of sterile flowers.

2. S. *símplex* Huds. (*unbranched upright B.*); leaves triangular at the base their sides flat, common flowerstalk nearly simple, stigma linear, fruit sessile. *E. B.* t. 745. S. erectum β. *L.*

Ditches and stagnant waters, especially in a gravelly soil. ♃. 7. — Much smaller than the last. Common flowerstalk rarely, if at all, branched, the branches or partial flowerstalks bearing only a single head of fertile flowers; the other fertile heads and all the sterile ones are sessile. The sides of the *leaves* are plane, not concave or grooved; the *flowers* pale yellow.

3. S. *nátans* L. (*floating B.*); stem flaccid, leaves floating, common flowerstalk simple, fruit with a long beak stalked, heads of sterile flowers several. Fries, Summ. p. 560. S. affine *Schn.*

Lakes. Island of North Uish, and Galloway, Scotland. Snowdon. ♃. 8. — Of this we have seen no specimens. Fries says the fruit is furnished with a long stipes, which seems to be formed by a contraction of its lower half. He does not describe the stigma, but it is probably the same as in the next, from which this principally differs by the fruit being more attenuate at both extremities.

4. S. *mínimum* Bauh. (*small B.*); stem flaccid, leaves floating plane, common flowerstalk simple, stigma oblong, fruit with a short beak sessile, head of sterile flowers solitary. S. natans. *Smith, E. B.* t. 273.

Lakes, ditches, and stagnant waters; abundant in the north. ♃. 7. — *Leaves* very long, linear, pellucid.

Ord. CII. ARACEÆ *Juss.*

Flowers monœcious, numerous, collected upon a *spadix*, which is generally enclosed within a 1-leaved *spatha;* barren and fertile ones usually on different parts of the spadix, sometimes intermingled. *Perianth* wanting. *Stamens* usually indefinite. *Anthers* turned outwards, nearly sessile or on flat *filaments*, usually 2-celled, sometimes 1-celled, sometimes 4- or many-celled two or more being united. — *Fertile fl. Ovary* free, with 1 or rarely more cells, sessile, solitary or aggregated. *Ovules* solitary or several together, erect, horizontal, or pendulous. *Stigma* sessile or nearly so. *Fruit* succulent. *Seeds* pulpy. *Embryo* usually with a contrary direction to the seed, in the axis of fleshy or mealy (rarely without) *albumen*, straight, with a cleft on its side for the emission of the *plumule*. *Radicle* usually at the opposite extremity from the *hilum*, rarely pointing to it. — Leaves *sheathing at the base, convolute in æstivation, sometimes compound, often cordate, usually with branching veins.* — Acrid and poisonous; but if the juice is dissipated by heat, or extracted by pressure, the leaves and roots become esculent; and the fecula of the latter is capable of being converted into excellent bread. Thus the *Colocasia esculenta*, and its allied species, are abundantly eaten in warm countries.

1. A'rum *Linn.* Cuckow-pint.

Spatha convolute at the base. *Spadix* with the fertile flowers at the base. *Stam.* (sessile) near the middle of the *spadix*, which is naked above. *Ovules* 2—6 in each *carpel*, horizontal. *Stigma* sessile, somewhat excentric. *Berry* with 1 *cell* and 1 or few *seeds*. *Embryo* at the opposite extremity of the seed from the *hilum*.—Name *apov*, in Greek, probably from *ar* or *aur*, in Hebrew and various old languages, denoting *fire*, on account of the fiery or acrid taste.

1. A. *maculátum* L. (*Cuckow-pint* or *Wake-Robin*); leaves all radical hastato-sagittate, lobes deflexed, spadix club-shaped obtuse shorter than the spatha. *E. B.* t. 1298.

Groves and hedges, frequent in England; rare in Scotland and Ireland. 4. 4, 5. — The *rhizoma* affords an abundant amylaceous substance, which, if properly prepared and its acrid juice expressed, proves an excellent substitute for bread-flour, and is sold for that purpose in great quantities at Weymouth, and in Portland Island. *Leaves* large, shining, often spotted with black. *Spatha* large, convolute. Above the *germens*, on the *spadix*, is a ring or circle of 2-celled, sessile *anthers*, and above them another ring of apparently imperfect *germens*. The extremity of the *spadix* is purplish. *Berries* persistent during winter, after the leaves and spadix have decayed, crowded into an oblong spike of a bright scarlet colour.

Ord. CIII. ORONTIACEÆ *R. Brown. Lindl.*

Flowers perfect, crowded on a simple thick *spadix*, usually furnished with a *spatha*. *Perianth* of 4—8 scales. *Stamens* hypogynous or perigynous, of the same number as the scales of the perianth. *Filaments* flattened or filiform. *Anthers* 2-celled, opening longitudinally or transversely. *Ovary* free, with 1 or more cells. *Ovules* erect or pendulous. *Style* wanting or subulate. *Stigma* capitate. *Fruit* baccate. *Embryo* slit on one side, usually in the axis of *albumen*.—Herbaceous *plants, with broad, entire or deeply divided, never floating leaves which are sometimes sword-shaped and equitant.*

1. A'corus *Linn.* Sweet-Sedge.

Flowers arranged upon a sessile *spadix*. *Spatha* a mere continuation of the scape and similar to the leaves (not convolute). *Perianth* of 6 pieces or scales, inferior. *Ovary* 3-celled. *Stigma* sessile. *Fruit* baccate, indehiscent, few-seeded.—Named from *a*, *out*, and κοριον, or κορη, the *pupil of the eye*, the diseases of which it was supposed to remove.

1. A. *Cálamus* L. (*common S.*); scape ancipitate prolonged into a leaf above the spadix. *E. B.* t. 356.

Watery places on the banks of rivers, in the middle and south-eastern counties of England, abundant in Norfolk and Suffolk. Rare if truly indigenous in Scotland; water of Girvan, near the town, and bog of Culzean near Maybole, Ayrshire; Castle Semple Loch, Renfrewshire. ♃. 6.—*Rhizoma* aromatic. *Scape*, like the *leaves*, ensiform-ancipitate. The agreeable scent of this plant has recommended it for garlands, and for strewing on the floor of the cathedral at Norwich on festival-days.

†† *Submerged or floating plants.* (Ord. CIV. CV.)

Ord. CIV. PISTIACEÆ *Rich.*

Perianth 0. *Flowers* 2, monœcious, enclosed in a *spatha*, but not borne on a spadix.—*Sterile fl.* solitary. *Stamens* 1—2 and distinct, or the *filaments* united, thick, and bearing 3—8 *anthers*.—*Fertile fl.* solitary. *Ovary* 1-celled, with 1 or more erect or horizontal *ovules*. *Style* short. *Stigma* simple. *Fruit* somewhat membranaceous and indehiscent, or bursting transversely, or baccate, 1- or more-seeded. *Seeds* with a coriaceous thick ribbed skin, and a thickened indurated *foramen*. *Embryo* either in the axis of a fleshy *albumen* and having a lateral cleft for the emission of the *plumule*, or at the apex of

the *nucleus*. *Radicle* at the opposite extremity from the *hilum*. — Floating *frondose plants*, *minute and usually lenticular*, *or with large lobed fronds*.

1. LEMNA *Linn.* Duckweed.

Spatha membranaceous, urceolate. *Stam.* 1—2, distinct, each bearing a 2-celled didymous *anther* (the cells bilocular?). *Fruit* utricular. — Fronds *without distinct stem or leaves*, *floating on the surface of the water*, *and increasing*, *not only by seeds*, *but*, *far more abundantly*, *by* gemmæ *or buds*, *concealed in lateral clefts of the parent frond*, *which*, *growing out on 2 opposite sides into new plants*, *and these again producing offspring in the same way*, *while still attached to their parent*, *present a most curious appearance*. — Name: λεμνα, of the Greeks, it is said from λεπις, a *scale*.

1. L. *trisúlca* L. (*Ivy-leaved D.*); fronds thin elliptic-lanceolate caudate at one extremity, at the other serrate, roots solitary. *E. B.* t. 926.

Clear stagnant waters. Less frequent in Scotland than in England. ☉. 6, 7. — *Fronds* $\frac{1}{2}$—$\frac{3}{4}$ of an inch in length, pellucid at the margins, reticulated. *Roots* solitary, calyptrate at the extremity, as in most of the genus. *Stamens* 2. *Ovary* with a single *ovule*. *Seed* solitary, transverse, attached by a short stalk to the bottom of the *utricle*.

2. L. *mínor* L. (*lesser D.*); fronds nearly ovate compressed, roots solitary. *E. B.* t. 1095.

Stagnant waters, common. ☉. 7. — About a line or a line and a half long, of a rather thick and succulent, but compact texture, slightly convex beneath. This is the most abundant of all the species, covering the surface of ditches and harbouring numerous insects and molluscæ, the food of ducks and other waterfowl, whence the English name of *Duckweed*. The young fronds constitute the *Lemna arhiza* of the French authors. *Stamens* 2. *Ovary* 1-ovuled. The *utricle* is single-seeded; *seed* transverse, with its *hilum* "directed towards the narrow end of the frond:" *Wilson*.

3. L. *polyrhíza* L. (*greater D.*); fronds obovate-rotundate compressed, roots numerous from the same point. *E. B.* t. 2458. Spirodela *Schleid.*

Stagnant waters. Rare in Scotland: near Glasgow. *Flowers* unknown in Britain. ☉. — The largest of all the species, half an inch long and nearly as broad, succulent, firm, faintly striate, a little convex below, where, and at the margin above, the frond is of a deep purple colour. Spiral vessels are conspicuous throughout the whole plant; but in all the other species there are either none, or they are evanescent. *Roots* numerous from a central point. *Stamens* 2; *filaments* tapering below. *Ovary* with 2 erect *ovules*. The fructification of this species has not been observed.

4. L. *gibba* L. (*gibbous D.*); fronds obovate nearly plane above, hemispherical beneath. *E. B.* t. 1233. Telmatophace *Schleid.*

Stagnant water, but not very frequent. Rare in Scotland. ☉. 6—9. — Size of *L. minor*, but readily distinguished by its gibbous or even hemispherical lower surface, which is, moreover, white, pellucid, and beautifully cellular, upper side plane, green, opaque. *Stamens* 2. *Ovary* with 2—7 erect *ovules*. *Utricle* at length bursting transversely. *Seeds* usually 2—4, rarely more, or solitary, erect.

Ord. CV. NAIADACEÆ *Juss.*

Flowers perfect[1] and all sessile, or imperfect and monœcious or diœcious. *Perianth?* of the *perfect fl.* of 3—4 wedge-shaped or clawed scales, or wanting; of the imperfect ones usually wanting, sometimes of 1—2 scales. *Stamens* definite, hypogynous. *Ovaries* solitary or several, 1-celled. *Ovules* usually solitary, erect or pendulous, rarely 3 and erect. *Style* simple, or more or less deeply 2—3-cleft. *Pericarps* dry, indehiscent, 1-celled, 1- (or rarely 2-) seeded. *Embryo* without *albumen*, with a thin skin, having a lateral cleft for the emission of the *plumule*. *Radicle* next the *hilum*, or at the opposite extremity of the seed. — *Submerged or floating* aquatics, with *very cellular leaves and stems*. Flowers *inconspicuous, sometimes spiked.*

1. Potamogeton. Flowers perfect. Perianth of 4 unguiculate sepals. Stamens 4. Carpels 4, sessile. Style entire.
2. Ruppia. Flowers perfect. Perianth 0. Stamens 4. Carpels 4, on long stalks. Stigma sessile, entire.
3. Zannichellia. Flowers imperfect, axillary. Carpels 4 or more, sessile. Style elongated, entire. Stigma discoid.
4. Najas. Flowers imperfect, axillary, solitary. Carpels solitary, sessile. Style with 2—4 elongated stigmas.
5. Zostera. Flowers imperfect, arranged on a flat spadix within a foliaceous spatha. Carpels sessile. Style with 2 elongated stigmas.

* *Pollen globose or oblong. Plants growing in fresh water, rarely in salt-marshes.*

1. Potamogéton *Linn.* Pond-weed.

Flowers perfect, sessile, upon a *spike* (or *spadix?*) which

[1] We would gladly have adopted the opinion of Dr. Lindley by limiting this Order to those genera which had imperfect flowers; but we can scarcely remove *Ruppia*, *Potamogeton*, *Aponogeton*, and *Ouvirandra* to the *Juncaginaceæ*. According, however, to the views of Decaisne, Kunth, and some others, the supposed sepals of these genera are merely bracteas, each stamen and carpel being a distinct flower; so that these plants have really all imperfect flowers, and are properly placed here. The perianth, if such it be, is sessile, on a kind of spadix or thickish peduncle: in the true *Juncaginaceæ* the lower flowers at least are stalked, preventing any ambiguity about the perianth or their being truly perfect.

issues from a sheathing *bractea* (or *spatha?*). *Perianth* single, of 4 clawed scales. *Stamens* 4. *Anthers* sessile, opposite the scales of the perianth. *Pistils* 4, which become 4 sessile *achenes*. *Styles* and *stigmas* undivided. — Named from ποταμος, a *river*, and γειτων, a *neighbour*. All the species grow in the water, and often present as beautiful an appearance in clear streams and ponds, as the *Fuci* do in the ocean. They protect the spawn of fish, and harbour innumerable aquatic insects, their roots and seeds affording food to water-birds. Chamisso and Schlechtendal have well illustrated this genus. (*See Linnæa*, ii. p. 159.)

* *Leaves all opposite and submerged; stipules none.*

1. P. *dénsus* L. (*opposite-leaved P.*); leaves crowded all opposite pellucid amplexicaul ovate-acuminate or lanceolate, spikes, shortly stalked about 4-flowered finally reflexed. *E. B.* t. 397.

Ditches, frequent. ♃. 6, 7. — *Peduncles* short. *Head* of *flowers* small rounded. *Leaves* keeled below, middle nerve or rib of many longitudinal cells, with 2 and sometimes 3 lateral parallel veins on each side, the inner one the strongest.

** *Leaves alternate, all submerged, with adnate stipules.*

2. P. *pectinátus* L. (*Fennel-leaved P.*); leaves distichous setaceous or lineal 1—3-nerved sheathing by means of their adnate stipules, upper ones 1—3-nerved, spike interrupted, achenes large 3-ribbed at the back, the two lateral ribs sometimes obsolete. — *α.* leaves setaceous 1-nerved canaliculate, achenes with the lateral keels conspicuous. *E. B.* t. 323. P. marinus *L.* — *β.* leaves broader. upper ones 3-nerved, lower 5-nerved, achenes with the lateral keels inconspicuous. P. pectinatus *var.* vulgaris *Ch. and Schl.* P. flabellatus *Bab.*

Rivers, lakes, ponds, and salt-marshes. Near Ayr, Scotland. — *β.* Denver and Burnham, Norfolk; Coventry, Bath, Gravesend, Hull, Yarmouth. ♃. 6, 7. — We think there can be no doubt that *P. flabellatus* Bab. is what Chamisso and Schlechtendal consider the common form of the species; for although in the specific character they say "leaves 1-nerved," they mention that the broad-leaved forms (2 lines broad) have an additional nerve near each margin. Mr. Babington says of his *P. flabellatus*, that the principal difference is in the earlier leaves, but that when in fruit it is very difficult to distinguish it from *P. pectinatus*.

3. P. *filifórmis* Pers. (*slender-leaved P.*); leaves distichous setaceous 1-nerved sheathing by means of their adnate stipules, spike interrupted, achenes (small) rounded but not ribbed on the back. *Cham. and Schlecht. l. c.* p. 167.

Lakes and ponds. Forfarshire and Berwickshire. ♃. 6, 7. — So similar to our *var.* α. of the last that we know no distinguishing character except the smaller flowers and fruit, and the achenes being quite rounded on the back after the cuticle has been removed: when this is not removed, they sometimes appear 3-ribbed externally. Kunth (En. iii. p. 136) unites them.

**** Leaves alternate, all linear, submerged; stipules free.*

4. P. *trichoides* Cham. (*hair-like P.*); leaves sub-setaceous, 1-nerved finely pointed, peduncles elongated, spike at length somewhat lax, stem capillary nearly terete. *Ch. and Schlecht.* l. c. p. 175.

Ponds and ditches. Bixley near Norwich. ♃. 7, 8. — We have seen no British specimens, nor are we at all satisfied that the foreign ones are specifically distinct from the next species, with which Kunth also is inclined to unite them. The fruit has an obscure tooth on the ventral suture near the base, which has not been observed in *P. pusillus*.

5. P. *pusíllus* L. (*small P.*); leaves narrow-linear 3—5-nerved with obscure connecting veins, peduncles 2—3 times longer than the somewhat lax spike, stem slightly compressed. — α. leaves 3-nerved, nerves in the middle between the midrib and the margin. *E. B.* t. 215. — β. leaves broader with an accessory nerve on each side between the margin and the primary lateral ones. P. compressus *L.*: *E. B.* t. 418.

Ditches and still waters. ♃. 7. — The *leaves* are more or less acute; the spikes oblong, compact or a little interrupted. We quite agree with Chamisso and Schlechtendal, who unite the *P. compressus* with *P. pusillus*.

6. P. *gramíneus* L. (*grassy P.*); leaves broadly linear obtuse 3-nerved with few and obscure connecting veins, peduncle scarcely longer than the oblong oval dense spike, stem slightly compressed. *E. B.* t. 2253. P. obtusifolius *Mert. and Koch.*

Ponds and ditches. Amberley, Sussex; Orford, near Warrington, Lancashire; Arbury Hall, Warwickshire; Deptford, Norwich, Yorkshire. Possil marsh, near Glasgow; Kincardineshire. ♃. 7. — Nearly allied to the last, but stouter, darker-coloured, and with short *peduncles*, scarcely longer than the stipule of the leaf from the axil of which they spring. The middle nerve or rib is accompanied by many parallel oblong reticulations both in this and the last species; but there are none of the numerous longitudinal parallel intermediate nerves seen in the two following. Occasionally the peduncles are nearly twice the length of the spike, when it becomes very difficult to distinguish this from var. β. of the last species, with which it agrees in general appearance; but we believe that the latter has always the two supplementary nerves, whereas *P. gramineus* has the leaves only

3-nerved. Judging from the specimens we have seen in herbaria, *P. gramineus* is more common than *P. pusillus* β., while *P. pusillus* α. is more common than either of the others.

7. P. *acutifólius* Link (*sharp-leaved P.*); stem compressed, leaves linear acuminate with 3 principal and numerous close parallel intermediate nerves occupying the whole surface, spikes oval compact about equalling in length the short peduncle. *Hook. in E. B. S.* t. 2609.

Rare? Hitherto only found in marsh-ditches at Amberley, Henfield, and Lewes, Sussex. 4. 7.— The numerous closely placed parallel nerves well distinguish this and the following species from their congeners.

8. P. *zosteræfólius* Schum. (*Grass-wrack-like P.*); stems compressed, leaves broadly linear acute with 3 principal and numerous close parallel intermediate nerves occupying the whole surface, spikes cylindrical upon long peduncles. *E. B.* t. 2685. P. cuspidatus *Schrad.*: *E. Fl.* v. i. p. 234.

Rare? Rivulet at Hovingham, Yorkshire; River Sow, at Stafford. Lakes of Rescobie and Forfar. 4. 7.— Larger than the last, with *peduncles* 3—4 inches long, and *spikes* cylindrical, an inch in length.

**** *Leaves alternate, ovate, lanceolate or oblong, all pellucid and submerged; stipules free.*

9. P. *críspus* L. (*curly P.*); stem compressed, leaves lanceolate waved and serrate 3-nerved sessile, fruit beaked. *E. B.* t. 1012.

Ditches and rivers, frequent. 4. 6, 7. — *Peduncles* elongated, not thickened upwards.

10. P. *perfoliátus* L. (*perfoliate P.*); leaves cordate-ovate sessile and amplexicaul 7-nerved with smaller intermediate nerves. *E. B.* t. 168.

Ditches and lakes, frequent. 4. 7. — *Peduncles* rather short, thick, not swollen upwards. *Spikes* oblong-ovate.

11. P. *prælóngus* Wulf. (*long-stalked P.*); leaves entire narrow-oblong semiamplexicaul obtuse and cymbiform at the end, with 3 principal and several lesser parallel nerves arising from the base connected by reticulations, stipules not winged, peduncles elongated, spikes cylindrical many-flowered. *E. B. S.* t. 2858.

Lakes and pools. Ditch by Caversham bridge, near Reading; River Sow, at Stafford; Gormere, Malham, Yorkshire. Berwickshire; Moss of Litie, Nairnshire; Lochleven, Kinross-shire. 4. 7. — This is best distinguished by its oblong (by no means elliptical) *leaves*, nerved from the base, where they are semiamplexicaul, and

by the lengthened *peduncle*, which is sometimes slightly thickene upwards. In size it almost equals *P. lucens*. *Stipules* large, low ones sometimes 3 inches long, white, tinged with red, not gree and without the crests or wings observable in the two next.

12. P. *longifólius* Gay (*long-leaved P.*); leaves entire elongato-lanceolate nearly sessile but attenuate below apiculat and flat at the end, stipules winged, spike with a few sub verticillate distant flowers, peduncle very long thickened up wards. *E. B. S.* t. 2847.

Lough Corrib, Galway, Ireland. 4. 7, 8. — "Nearly allied t *P. prælongus*, but has not the amplexicaul and hood-tipped leaves that plant:" *Bab.* "The most striking character is the singular an prominent midrib, the central portion of which consists of three lo gitudinal veins or ribs, running closely parallel with each othe whilst on either side are 3—6 ribs running closely parallel to then but rather more distant from each other; the whole connected b transverse veins, and in the fresh state often more than one-fourth an inch in width, the whole appearing, until closely inspected, a com pact solid midrib, on either side of which are 2—5 fine veins, th whole connected by numerous secondary veinlets." *J. Kirk.* Cha misso and Schlechtendal do not consider it any way distinct fro the next: in both the stipules are green, with two prominent wing or crests on the back. Mr. Borrer informs us that the Rydal Wat plant is *P. heterophyllus*.

13. P. *lúcens* L. (*shining P.*); leaves stalked elliptic-lan ceolate mucronate denticulate flat, with several opposite pai of parallel nerves springing from the midrib connected by re ticulations, stipules winged, spikes cylindrical many-flowered *E. B.* t. 376.

Lakes, pools, and streams, abundant. 4. 6, 7. — The large of our species, and very beautiful in the nervation of its leave Chamisso and Schlechtendal include it in a division of the genu which has sometimes floating and coriaceous leaves (*folia accessoria* (as it is found by *Mr. Wilson* at Llyn Maclog): they change its nam to *P. Proteus*, and consider the *P. heterophyllus* a variety of it. To they appear distinct; but aquatic plants of all kinds are extremel liable to vary. *Stipules* large, with two prominent wings at the back *Stem* thinner than the lower part of the peduncle, which is thickene upwards, and about the same length as the spike. *Spikes* cylindrica 2 inches long. *Nerve* prominent on both sides of the leaf. *Upp leaves* smaller than the *lower* ones, and all suddenly contracte towards the point. — Coriaceous leaves rare, ovato-lanceolate, mod rately acute, less evidently stalked than in *P. heterophyllus*; foliag more crowded, and stipules larger and (in proportion) narrower tha in that species. *Spikes* twice as long. *Wilson.*

***** *Leaves alternate, upper ones floating, broader than the rest; st pules free.*

14. P. *heterophýllus* Schreb. (*various-leaved P.*); submerge

leaves sessile lanceolate attenuate at both ends apiculate denticulate or entire membranaceous, floating ones elliptical stalked slightly coriaceous, stipules strongly ribbed, peduncles thickened upwards. *E. B.* t. 1285.

Pools and ditches, in various parts of the country. 4. 6, 7. — *Mr. Wilson* finds this sometimes without floating *leaves*, when it seems intermediate between *P. lanceolatus* and *P. rufescens*. "The *stipules*, which are not dorsally winged, are short and broad, yet with 2 stout principal ribs, ovate and blunt; both they, and the leaves subtending the flower-stalk, are *widely spreading*. *Leaves* distantly inserted on the stem; upper ones considerably larger than the rest. — Distinguished by these marks, and the clavate flower-stalk from *P. rufescens* and *lanceolatus*:" *Wilson*. Wahlenberg, Hartmann, and Fries are of opinion that this is the true *P. gramineus* of Linnæus; but Linnæus adopted that name from Ray, and Ray's *P. gramineus* is the species commonly so called in this country.

15. P. *lanceolátus* Sm. (*lanceolate P.*); submerged leaves lanceolate "not apiculate" tapering at the base entire membranaceous with about 5—7 nerves and transverse veins, floating leaves elliptic-lanceolate subcoriaceous many-nerved petiolate, peduncle about as long as the leaves not thickened upwards, spikes elliptical. — β. floating leaves none. P. lanceolatus *E. B.* t. 1985.

Pools and ditches. — α. and β. growing together in a rivulet in Anglesea. Angus-shire; Kincardineshire; in the Lossie, by Elgin. 4. 7. — This plant had been very little understood till Mr. Wilson found it growing in a small rivulet in Anglesea, having a moderately swift stream. *Floating leaves* are *always* found where the current is slow. Small chain-like reticulations are distinguishable near the midrib on the submerged leaves, but not on the floating leaves, which are elegantly overspread by them:" *Wilson in litt.* This remark is quite correct, and the portion of chain-like reticulations increases gradually upwards. The difficulty is now to distinguish this plant from the preceding, than which, however, it is much smaller and more delicate in all its parts. Sir J. E. Smith considered the *P. setaceus* of Linn. and Huds. and *Fl. Brit.* to be probably the same as the present, which can hardly be correct.

16. P. *rufescens* Schrad. (*reddish P.*); submerged leaves lanceolate attenuate at both ends "not apiculate" entire membranaceous many-nerved with connecting veins and many linear reticulations at the midrib, floating ones subcoriaceous oblong or obovate rather longer than their stalks, stipules not winged, peduncles not thickened upwards. P. fluitans *E. B.* t. 1286.

Ditches and slow streams, in many parts of England. Anglesea. Near Glasgow and Forfar; in the Gaddie, at Premnay. Aberdeenshire. 4. 7. — "This does, in some situations, much resemble *P. lucens*. The coriaceous floating leaves are nearly as acute as the lower ones,

differing only in their firmer texture and in being stalked; the rib shape, and size are nearly alike in both. The lateral ribs or nerv are by no means separate to the base of the leaf, but arise from variou parts of the central rib, some of them one third the length of the le from its base; they are from 6—7 in number on each side, 2 of the more evident than the rest: flower-stalk not thickened upwards *Wilson in litt.* The plant is remarkable for its reddish-olive colou and is perhaps better known by its general aspect, size, and hue, tha by any character that can be applied to it. — To us, the above specie with floating leaves seem gradually to pass into one another.

17. P. *plantagíneus* Ducr. (*Plantain-leaved P.*); leaves a membranous stalked, lower ones oblong, upper elliptica achenes minute obliquely ovate rounded on the back whe recent acutely keeled when dry, spike slender cylindrica densely-flowered, peduncle long not thickened upward *E. B. S.* t. 2848. P. coloratus *Horn.: Cham. and Schl. l.* p. 194.

Deep peaty pits and ditches, probably far from rare. Vazon Bay Guernsey. Norfolk, Cambridgeshire, Kent. Ferneyrig Loch, Eccle Berwickshire. 6, 7. — It has usually been confounded with *P. natan* from which it may be discriminated by its beautifully diaphanou reticulated leaves, none of which are coriaceous, and its much smalle fruit. It is more nearly allied to *P. oblongus*, from which its leave as well as the acutely keeled back of the fruit when dry, clearly dis tinguish it; in that plant the fruit is always obtuse: *Bab.*

18. P. *oblóngus* Viv. (*oblong-leaved P.*); "leaves all stalked upper ones coriaceous floating oblong-elliptical, lower linear lanceolate, achenes minute with their back always obtuse an rounded, spike slender cylindrical densely-flowered upon a lon terete peduncle." *Bab.: E. B. S.* t. 2849. P. natans ε. *Mer and Koch.*

"Far from uncommon, in wet ditches, small streams, ponds an bogs." Frequent in Scotland. 4. 7. — "It is distinguished fro *P. natans*, with which most botanists probably confound it, by th form and size of its fruit, as well as by other characters:" *Bab.* W fear some of the above characters taken from the fruit are not constan for we have examined specimens where the achenes were decidedl marked on the back with 3 ridges, the middle one being acute. I is found usually in bogs and ditches almost dry in summer; — ma not this sufficiently explain why the fruit is not above half the size o that of the next species?

19. P. *nátans* L. (*sharp-fruited broad-leaved P.*); lowe leaves linear submembranaceous or wanting, upper elliptica coriaceous floating on long stalks many-nerved distinctly cel lular, fruit (large) keeled at the back. *E. B.* t. 1822.

Stagnant waters and slow streams, frequent. 4. 6, 7. — Very variable in general size, and in the shape of its floating leave

which are more or less elongated, sometimes linear-lanceolate, obtuse at the base, or decurrent on the foot-stalks. The *lower leaves* appear to differ from the submerged leaves of all the others, except *R. oblongus*, in having their substance composed of the same small, but distinct, cells or reticulations as the floating ones. These submerged leaves are frequently wholly wanting, especially when the plant grows in very shallow water. Chamisso and Schlechtendal describe the lower petioles as leafless, which, according to them, is the principal difference between this and the last species; but such assuredly is not always the case.

2. RÚPPIA *Linn.* Ruppia.

Flowers perfect, about 2 on a *spike* (or *spadix?*) arising from the sheathing bases of the leaves, which perform the office of a *spatha*. *Perianth* 0. *Stam.* 4. *Anthers* 1-celled. *Style* and *stigmas* undivided. *Achenes* 4, on long stalks, 1-seeded. *Albumen* 0. — Named after *Henry Bernard Ruppius*, author, in 1718, of *Flora Jenensis*.

1. R. *maritima* L. (*Sea R.*). *E. B.* t. 136.; *Hook. in Fl. Lond.* t. 50. — *α*. Peduncles elongated, leaves broader, sheaths inflated. — *β*. Peduncles shorter, leaves narrow, sheaths small close. R. rostellata *Koch*.

Salt-water pools and ditches. ♃. 7, 8. — *Stems* slender, filiform, flexuose, branched, leafy. *Leaves* linear, setaceous, with *sheaths* sometimes narrow and small, at other times large and inflated. *Spadix* at first very short, included in the *sheath* or *spatha*, with 2 green *flowers* one above another on opposite sides, and quite destitute of perianth. *Anthers* large, sessile, bursting horizontally, 1-celled. Mertens and Koch say that each pair forms the 2 cells of 1 *anther*; and that there are in reality but 2 sessile *stamens*. *Pollen* a tube, with 3 globules, 1 in the middle and 1 at each end of the tube. *Germens* resembling 4 minute tubercles in the centre between the anthers. At the time of flowering, the *spadix* lengthens remarkably, to the height of 5 or 6 inches or more, and becomes spirally twisted, so as to bring the blossoms to the surface of the water; but Mr. Wilson observes the fruit to be submerged in every stage. When the *germens* swell, their base is elongated into a footstalk, one or two inches long. Each then becomes an oblique ovate, acuminate, fleshy *achene* or *drupe*. This *drupe* is sometimes more beaked than at other times, and the sheaths of the leaves are occasionally but little dilated: then the plant becomes *R. rostellata* of Koch and of Reichenbach in his *Iconog.* t. 174. f. 306, which indeed is the more common state of the plant, with us. In *R. maritima* the anthers (anther-cells, *Koch*) are said to be oblong, 1½ times longer than broad, in *R. rostellata* nearly round or subquadrate. It is a very widely diffused plant, being found in America, the Sandwich Islands, and on the coasts of Tranquebar and Ceylon, constantly preserving the same appearance.

3. Zannichéllia *Linn.* Horned Pond-weed.

Flowers monœcious. — *Barren fl. Perianth* none. *Stam.* *Anthers* 2—4-celled. — *Fertile fl. Perianth* single, of 1 lea *Germens* 4 or more. *Style* elongated, undivided. *Stigma* peltat *Achenes* nearly sessile. — Named in honour of *John Jerom* *Zannichelli*, a Venetian apothecary and botanist.

1. Z. *palústris* L. (*common H.*); *E. B.* t. 1844. — *α.* flowe sessile, style half as long as the shortly-stalked achenes. — *β* flowers stalked, style half as long as the longest-stalked achene Z. pedunculata *Reich.* — *γ.* *style short, about six times short than the sessile achenes. Z. polycarpa *Nolte.*

Ditches and stagnant waters. ☉. 8. — Floating. *Stems* lon filiform, branched. *Leaves* opposite, linear, entire, sometimes emarg nate at the point. *Flowers* axillary, from a membranaceous bracte *Sterile fl.* upon a very short stalk, from the base of which arises single naked *anther*, borne on a long white *filament*. *Anthers* wit 2—4 cells. — The form of the stigma, the length of the style, th number of anther-cells, the size and mode of growth, and the frui more or less stipitate, are very variable ; and several proposed speci are described and figured by Reichenbach, some of which are notice above as varieties.

4. Najas *Linn.* Najas.

Flowers imperfect, destitute of *perianth*, axillary, solitar *Barren fl.* within a calyptriform *spatha*. *Stam.* 1. *Anthe* nearly sessile, 4-celled. *Fertile fl.* without a *spatha*. *Germe* 1, sessile, with one erect *ovule*. *Style* 1. *Stigmas* 2—4, elon gated, linear. *Fruit* with 1 seed. — Named after the *Naiade* or Water-Nymphs.

1. N. *flexilis* Rostk. (*flexible N.*); leaves narrow linea very minutely denticulate, sheaths ciliato-denticulate. Cau linia flexilis *Willd.*

Bottom of lakes and streams, near Roundstone, Connemara, Ga way. *Mr. D. Oliver.* 4. 8. — *Leaves* ternate or nearly opposit 1-nerved, pellucid, sharply but minutely and remotely denticulat We have not been able to examine the flowers of any of the genu in a recent state: the sterile plants have not, we believe, been foun in this country; we observe four stigmas in the Irish specimens, described by Kunth.

** *Pollen confervoid. Plants growing in the sea.*

5. Zostéra *Linn.* Grass-wrack.

Flowers imperfect. *Stamens* and *pistils* inserted in 2 row upon one side of a flat thin *spadix*. *Spatha* foliaceous. *Anther*

ovate, sessile, alternating with the ovate *germens*. *Style* 1. *Stigmas* 2, elongated, linear. *Fruit* with 1 *seed* (bursting vertically: *Wilson*). *Albumen* 0.—Named from ζωστηρ, a *girdle*, or *riband*, which the leaves somewhat resemble.

1. Z. *marína* L. (*broad-leaved G.*); leaves linear 1—7-nerved, spadix linear without appendages on the margin, achenes striate. *E. B.* t. 467.—*α*. Leaves broader, 3—5-nerved, peduncle of the spatha thick, shorter than the spadix.—*β*. Leaves narrow 1—3-nerved, peduncle of the spatha slender as long or longer than the spadix. Z. angustifolia *Roth*.

α. In the sea; *β*. creeks and salt-water ditches, and on the sea-shore; both common. ♃. 7, 8. — *Stems* various in length, as are the linear obtuse, somewhat 2—7-nerved *leaves*, which have sheathing bases. *Spadix* linear, arising from a sheathing portion of the leaf, which thus forms the *spatha*. *Flowers* green, borne, in two rows, on one side of the *spadix*, quite destitute of perianth *Pistils* and *anthers* alternate, generally 2 *anthers* and then 1 *pistil*, both ovate, or oblong-ovate; the *germen* terminated by a bipartite *style* and two filiform *stigmas*. *Anthers* bursting irregularly.—This plant is used in the packing of glass bottles and earthenware. In the south of Russia, Pallas tells us, it is found among pottery in old tombs. Beds are frequently made of it, especially in Iceland and the north of Europe: and it is sold in our shops under the name of "*Alva* (*Ulva* or *Alga*) *marina*," for similar purposes.

2. Z. *nána* Roth (*dwarf G.*); leaves 1-nerved, spadix short few-flowered with extra-marginal appendages, achenes smooth. *Borr. in E. B. S.* t. 2931.

Dover beach, Poole Harbour, Dorsetshire; Ryde, Isle of Wight. Between Fairlie and Hunterston Point, Ayrshire, covering hundreds of acres. ♃. 4—8. — *Leaves* slender, 3—4 inches or more in length. *Spathas* oblong-lanceolate, inflated. *Fruit* faintly striated (Fries).

Sub-Class II. GLUMACEÆ. (Ord. CVI. CVII.)

Flowers destitute of true perianth (unless the curious urceolate or 2—3-valved covering to the ovary in some Cyperaceæ, *or the glumellas of the* Gramineæ, *be considered such), but enclosed within imbricated alternate chuffy scales or bracteas.*

Conspectus of the Orders.

106. Cyperaceæ. Embryo at the base of the albumen and enclosed within it. Leaves with entire sheaths.
107. Gramineæ. Embryo lateral, naked. Leaves with split sheaths.

Ord. CVI. CYPERACEÆ *Juss.*

Flowers perfect or imperfect, furnished each with a solitary partial bractea called a *glume*, imbricated on a common axis or *rachis*, the whole constituting a *spikelet*. *Perianth?* (here called *perigynium*) only in the fertile imperfect flowers, rarely membranaceous, 2—3-valved, the valves distinct or usually united (in *Carex*), generally entirely wanting. *Stamens* hypogynous, definite (1—12), usually 3, with sometimes an additional row of abortive *filaments* (called *setæ*, or *hypogynous bristles*). *Anthers* erect, 2-celled. *Ovary* superior, 1-celled with one erect *ovule* at its base. *Style* single, 2—3-cleft. *Stigmas* 2—3. *Fruit* an *achene*, crustaceous, or with a corky or fleshy, sometimes bony skin. *Embryo* lenticular, enclosed in the base of copious *albumen*.—Stems *often angular*, *frequently without joints*. Leaves *with entire sheaths*. Lower glumes *in each spikelet often destitute of stamens or pistil.*

* *Flowers perfect. Spikelets* 2-*ranked. Perigynium* 0.

1. Cyperus. Spikelets many-flowered; glumes of one valve, keeled, mostly all fertile, equal. Bristles none. Style deciduous.
2. Schœnus. Spikelets 1—4-flowered; lower glumes smaller, empty. Style deciduous.

** *Flowers perfect. Spikelets with the glumes imbricating on all sides. Perigynium* 0.

† *Several of the lower glumes empty or smaller than the fertile ones.*

3. Cladium. Spikelets with 1—2 perfect flowers. Achene with a fleshy or somewhat corky coat, pointed with the slender base of the style. Bristles 0.
4. Rhynchospora. Spikelets few-flowered. Achene compressed, crowned with the persistent dilated base of the style. Bristles 6—12.

†† *Lowest* (1—2) *glumes empty or larger than the others, sometimes all fertile.*

‡ *Bristles scarcely so long as the glumes, or wanting.*

5. Blysmus. Spikelets bracteated, alternate, forming a distichous or compressed spike. Achenes crowned with the persistent filiform style.
6. Eleocharis. Spikelets solitary. Achene crowned with the dilated persistent base of the style. Bristles 4—12.
7. Isolepis. Spikelets solitary or fascicled. Achene pointed with the narrow base of the style (the remainder of which is deciduous), or pointless. Bristles 0.
8. Scirpus. Spikelets solitary or fascicled. Achene pointed with the persistent narrow base of the style (the remainder of which is deciduous), or pointless. Bristles about 6.

‡‡ *Bristles at length much longer than the glumes.*

9. ERIOPHORUM. Bristles straight, at length silky.

*** *Flowers imperfect.*

10. KOBRESIA. Spikelets aggregated, with a scale-like bractea at the base, 1—2-flowered; fertile flowers with a lateral glume. Perigynium 0.

11. CAREX. Achene enclosed within an urceolate perigynium.

* *Flowers perfect. Glumes of each spikelet imbricated in two opposite rows. Perigynium* 0.

1. CYPÉRUS *Linn.* Cyperus or Galingale.

Spikelets many-flowered. *Glumes* keeled, imbricated in 2 opposite rows, mostly fertile, equal. *Hypogynous bristles* 0. *Style* not dilated at the base, 2—3-cleft, deciduous. *Achene* often tipped with the small base of the style. — Named from κυπειρος of the Greeks, an appellation given to one of this genus, probably from the flowers being the colour of the κυπριος χαλκος, or copper.

1. C. *lóngus* L. (*sweet C.*, or *English G.*); spikelets linear-lanceolate erecto-patent in doubly compound umbels, general involucre very long leafy, partial small, stem triangular, stigmas 3. *E. B.* t. 1309.

Very rare. Marsh near St. David's, Pembrokeshire; Walton-in-Gordan, Somersetshire; near Seabrooke, Kent; Boyton, Wilts; Penzance, Cornwall; Isle of Wight. Guernsey and Jersey. 4. 8, 9. — *Root* creeping, very aromatic and astringent.

2. *C. *fúscus* L. (*brown C.*); spikelets linear-lanceolate fasciculato-corymbose, glumes patent, involucre of 3 unequal leaves, stem triangular, stigmas 3. *E. B. S.* t. 2626.

Eel Brook meadow, Little Chelsea, near Walham Green; Peat-pond on Shalworth common, 2 miles from Godalming, plentiful; Codhill bog, Grusbro moor, Yorkshire. 4. 8, 9. — A small plant, only a few inches high. *Root* fibrous. Of the genus *Cyperus* about 370 species are described or noticed in Kunth's *Enumeratio*, some of which are, no doubt, mere varieties. Most of them are tropical: they gradually diminish in number as we recede from the tropics; so that though 2 species have been found in England, none exists in Scotland.

2. SCHŒ'NUS *Linn.* Bog-rush.

Spikelets 1—4-flowered. *Glumes* 6—9, imbricated in 2 opposite rows, lower ones smaller, empty. *Hypogynous bristles* 3—6, small or none. *Style* not dilated at the base, 3-fid, deciduous. *Achene* trigonous, tipped with the slender base of the

style, or pointless.—Name: from σχοινος, a *cord*, because kind of cordage was anciently made from plants of this tribe.

1. S. *nígricans* L. (*black B.*); stem rounded, spikelets collected into a rounded head shorter than the outer bracteas glumes scabrous at the keel. *E. B.* t. 1121.

Wet moors and boggy places. Rare in Scotland, except on the West coast. ♃. 6, 7. — Remarkable for its rigid habit, nearly setaceous *leaves*, and the dark brown almost black heads of *flowers*. The *style* is jointed upon the germen and darker than it. "*Bristles* small, 3—5, reddish-brown, spiny, the spines pointing upwards:" *Mr. Wilson.* On account of the bristles this is allied to Mr. Brown's genus *Chætospora*, in which indeed Kunth places it.

** *Flowers perfect. Glumes of each spikelet imbricated on all sides. Perigynium* 0.

3. Cládium *Schrad.* Twig-rush.

Spikelets 1—2-flowered. *Glumes* 5—6, imbricated on all sides, the lower ones empty and smaller. *Style* with a conical base, deciduous. *Achene* with a somewhat loose, fleshy, or corky coat, tipped with the ovate-conical but not jointed base of the style. *Hypogynous bristles* none.—Named from κλαδος, a *branch*; so called, perhaps, from the many branches bearing spikelets.

1. C. *Maríscus* Br. (*prickly T.*); panicle much divided leafy, spikelets capitato-conglomerate, stem rounded leafy, margins of the leaves and keel rough. Schœnus *L.*: *E. B.* t. 950.

Boggy and fenny places, in several parts of England, as in Norfolk, Cambridge, Kent, Cheshire, Askem in Yorkshire, &c. Plentiful in Galloway and Sutherlandshire, Scotland. ♃. 7, 8. — *Plant* 3—5 ft. high, leafy. *Leaves* rough, almost prickly at the margin and keel. *Glumes* ovate, brown, 6—7 in an ovate *spikelet*; inner ones the longest, generally the two or sometimes three innermost ones are floriferous; of which one ("sometimes 2, more rarely all:" *Wilson*) bears a coated *nut*, almost as large as the spikelet. *Stigmas* generally two, sometimes cloven: *Wilson.*

4. Rhynchóspora *Vahl.* Beak-rush.

Spikelets few-flowered. *Glumes* 6—7, imbricated on all sides, the lower ones smaller, empty. *Hypogynous bristles* several, included, toothed. *Style* subulate, bifid, dilated at the base. *Achene* crowned with the peristent, more or less articulated, dilated base of the *style*.—Named from ῥυγχος, a *beak*, and σπορα, a *seed*. (Very different in habit from *Eleocharis*, although near in generic character.)

1. R. *álba* Vahl (*white B.*); spikelets in a compact corymb as long as the outer bracteas, leaves narrow-linear, base of the style without teeth, bristles 9—12 with deflexed teeth, stamens 2. Schœnus *L.: E. B.* t. 985.

Wet pastures and turfy bogs. ♃. 6—8. — *Spikelets* of *flowers* white or whitish, collected so as to form a level surface at the top. In the flowers are 8—11 bristles, with reflexed teeth, much longer than the germen, and decidedly placed outside the 2 stamens. *Fruit*, in this and *R. fusca*, obovate, compressed, distinctly margined, tapering at the base into a short stalk. *Style* persistent, thin, pellucid, often greenish, dilated at the base, which is not articulated, nor so broad as the seed, but immediately distinguishable from the shining *achene* by its colour and texture.

2. R. *fúsca* Sm. (*brown B.*); spikelets in an oval head much shorter than the outer bracteas, leaves nearly filiform, base of the style with erect teeth, bristles 6 with ascending teeth, stamens 3. Schœnus *L.: E. B.* t. 1575.

Bogs, principally in the south-west of England and Ireland. ♃. 7, 8. — Habit of the last, though very different in specific character. Heads of *flowers* oval, rich brown; *spikelets* larger, and the *stigmas* more protruded. *Stamens* 3. Smith and Sturm have figured and described only 3 bristles to each flower: we find 6 (which have erect teeth: *Wilson*) in the British, as well as in American specimens, which latter are in no respect different from ours.

5. Blýsmus *Panz.* Blysmus.

Spikelets bracteated, arranged on a zigzag rachis into a distichous compressed *spike*. *Glumes* imbricated on all sides; the outermost gradually the largest, empty. *Hypogynous bristles* 3—6, or none. *Achene* compressed, oval, gradually tapering into the persistent style. — Named from βλυσμος, *source*, or *spring*, near which the species usually grow.

1. B. *compréssus* Panz. (*broad-leaved B.*); lowermost bractea subulate somewhat leafy, bristles 3—6 with reflexed teeth persistent as long as the permanent style, leaves flat keeled rough on the margins and keel. Schœnus *L.: E. B.* t. 791. Scirpus caricinus *E. Fl.* v. i. p. 58. Carex uliginosa *L.*

Boggy pastures, by river-sides and near the sea, not uncommon. ♃. 6, 7. — *Stem* 6—8 inches high, leafy. *Glumes* brown, striate. *Bristles* with reflexed spines. The habit of this and the following species is quite peculiar.

2. B. *rúfus* Link (*narrow-leaved B.*); bracteas all equally membranaceous, bristles 1—6 slender caducous or none, leaves very narrow grooved smooth. Schœnus *E. B.* t. 1010. Scirpus *Schrad.: E. Fl.* v. i. p. 59.

Marshy plains, especially near the sea; particularly common in

Scotland, as far as Shetland. On the coast of Wales, west of England, and west of Ireland. 4. 7. — Slenderer and more rigid than the last, more upright: *spikes* darker; the *glumes* more membranaceous, thin, not striate, and obtuser, in both very broad and convolute.

6. Eleócharis *Br.* Spike-rush.

Spikelets solitary, terminal, many-flowered. *Glumes* imbricated on all sides, uniform, scarcely any empty, lowermost the largest. *Hypogynous bristles* (4—12) toothed, included, rarely none. *Style* 2—3-fid, its dilated base jointed upon the *germen*. *Achene* mostly lenticular, crowned with the broad indurated corky base of the *style*. — *Marsh plants*. Stems *simple*, *leafless*, *sheathed at the base*. — Name: ελος, ελεος, a *marsh*, and χαιρω, to *delight*; from the place of growth.

1. E. *palústris* Br. (*creeping S.*); stem rounded, root creeping, stigmas 2, fruit lenticular plano-convex crowned with the compressed base of the style shorter than the 4—6 bristles. Scirpus *L.*: *E. B.* t. 131. E. uniglumis *Bab.*

Sides of ditches and wet marshy places, frequent. 4. 6, 7.—"*Root* creeping (usually to a great length), black and shining, as well as the external *sheaths* of the *stem*. *Bristles*, in the flower only 4, longer than the ripe fruit, flattened, dilated at the base, and broader than the filaments. *Receptacle* elongated below the insertion of the filaments, so that the flower appears to be not quite sessile as it is in *E. multicaulis*. *Germen* shorter and broader than in the next species, the *style* is also shorter. Again: the section of the stem is different from that of *E. multic.*, without any central pith, but with larger membranous tubes, surrounded by smaller ones:" *Wilson, MSS.* Some botanical writers make two species of this: one with the outer glume only half surrounding the spike at its base, the other, hence called *E. uniglumis* by Link, almost wholly surrounding it. For the last the following stations are given: Aberdeen, Barvas, Isle of Lewis, and Parkstone, near Poole Harbour. Mr. Babington has, in the Ann. Nat. Hist., July, 1852, p. 20., described a species under the name of *E. Watsoni*, which appears to us to be the *Scirpus intermedius* Thuill., now generally referred to *E. palustris*; it is small, and the root scarcely creeping: it is only known from two or three stems having been found in Dr. Balfour's herbarium among *Sc. pauciflorus*, which he had collected at Taynlone in Cantyre.

2. E. *multicaúlis* Sm. (*many-stalked S.*); stem rounded, root scarcely creeping, stigmas 3, fruit obovate, triquetrous crowned with the triquetrous base of the style longer than the 6 bristles. Scirpus *E. B.* t. 1187. Scirpus palustris β. *Linn. Lapp.* ed. 2.

Not uncommon, probably, in marshy places throughout the kingdom, but frequently passed by for *E. palustris*. 4. 7. — Exceedingly closely allied to the last, of which Kunth seems disposed to consider it a variety. Like *E. palust.* it has the outer glume either half surrounding or almost wholly surrounding the spikelet: the

latter state is the *E. uniglumis* of many foreign collectors. The simplest and sometimes only distinguishing character between this and *E. palustris* is afforded by the fruit; but in the states usually found, Mr. Wilson points out the following in addition: — "*Root* not creeping.[1] *Sheaths* of the stem brown, not shining: the *stems* are always inclined, frequently bent and almost prostrate. *Bristles* 6, shorter and narrower than in the former species, the base not dilated, shorter than the ripe fruit. The *receptacle* is elongated above the insertion of the filaments; hence the *germen* seems to be attenuated below. *Stem* with a stout central pith, with membranous tubes of looser texture interposed between it and the external part. Some of the *bristles* in the flower seem to be attached to the receptacle higher up than the base of the filaments, but still 3 of these bristles are at the exterior base of those filaments:" *Wilson MSS.*

3. E. *aciculáris* Roem. et Sch. (*least S.*); stem setaceous almost round, sheaths leafless, spike ovate acute, glumes equal acute, stigmas 3, bristles 2—3. *Ed. Cat.* p. 5. Scirpus *E. B.* t. 749. Isolepis *Schlecht.* Scirpidium *Nees.*

Sides of lakes, and wet, sandy, and marshy places, frequent. ♃. 7, 8. — The most slender and delicate of the *Spike-rushes*. *Root* fibrous, with filiform runners. *Fruit* obovate, oblong, compressed, pale yellow, beautifully impressed with dotted lines, tipped with the almost globose dark base of the *style*.

7. Isólepis *R. Brown.* Isolepis. Mud-rush.

Spikelets many-flowered. *Glumes* imbricated on all sides, nearly all fertile and equal. *Hypogynous bristles* 0. *Style* 2—3-fid, not thickened at the base, deciduous. *Achene* tipped with the narrow base of the style, or pointless.—Named from ισος, *equal*, and λεπις, *a scale*, on account of the relative form of the scales which constitute the inflorescence.

* *Styles* 2. *Achenes compressed. Spike solitary, terminal.* Eleogiton.

1. I. *fluitans* R. Br. (*floating I.*); stem floating compressed branched, spikes ovate, glumes nearly equal obtuse, stigmas 2, bristles none, fruit obovate plano-convex tipped with the narrow base of the style. Scirpus *L.: E. B.* t. 216. Eleocharis *Hook. Br. Fl.* Eleogiton *Link. Lindl.*

Ditches and still lakes, and pools of water, which are sometimes dried up. ♃. 6, 7.

** *Stigmas* 3. *Achenes triquetrous.*

† *Spikes* 1—3, *often apparently lateral, from the lower bractea being a continuation of the stem.*

2. I. *setácea* R. Br. (*Bristle-stalked M.*); stem compressed

[1] Not, indeed, as in the common form of *E. palustris*; but it certainly sends out root-stocks to the length of 2 or 3 inches, from which fibres proceed below and new shoots above. The *roots* cannot be called simply tufted.

with 1 or 2 leaves at the base, spikelets about 2 terminal, general bractea erect leafy much shorter than the stem, achene mucronate ribbed obovate and marked with transverse lines. *E. B.* t. 1693.

Moist gravelly places, frequent. ♃. 7, 8. — *Stems* tufted, 2—5 in. high, very slender. *Stam.* 2. *Stigmas* 3.

3. I. *Sávii* Schultes (*Savi's M.*); stem round leafy below, spikelets 1—3 terminal shorter than the unequally two-leaved, involucre, fruit subglobose minutely dotted not furrowed. Scirpus *Hook.* in *E. B.* S. t. 2782. *Roem. et Sch.* Scirpus filiformis *Savi.* — β. *monostachys;* spikelet solitary with a shorter involucral bractea. *Hook.* l. c. I. pygmæa *Kunth.* Fimbristylis *Vahl.* Scirpus leptaleus *Koch.*

Wet bogs, Ireland, and in the west of England and Scotland; Shanklin, Isle of Wight, plentiful. Jersey. —β. Dorsetshire; North Devon; near Ryde, Isle of Wight, not uncommon. Cork, and other places in Ireland. ♃. 7. — In habit much resembling the last species, as the *var.* β. does the *Eleocharis acicularis;* the fruit is, however quite peculiar. *Stamens* 3. *Fruit* usually rough, with slightly elevated points, but in specimens from Galloway, Scotland, it only appears to be rough on account of numerous impressed dots, like a thimble. The name *pygmæa* is the oldest, but is not always applicable.

†† *Spikes numerous, collected into globular heads.*

4. I. *Holoschœ'nus* Roem. and Sch. (*round cluster-headed M.*); stem rounded, spikelets lateral collected into compact globular sessile or stalked heads, leaves subulate channelled. Scirpus *L.*: *E. B.* t. 1612.

Sandy sea-shores, only found in the extreme southern and western parts of England. ♃. 9.

8. Scírpus *Linn.* Club-rush. Bull-rush.

Spikelets solitary or fascicled, many-flowered. *Glumes* imbricated on all sides, equal, 1 or 2 of the lowest sometimes sterile. *Hypogynous bristles* about 6, usually retrorsely toothed, scarcely so long as the glumes. *Style* not jointed at the base, deciduous. *Achene* tipped with the narrow base of the style, or pointless. — Name, according to Théis, from *Cirs*, in Celtic, which makes *Cors* in the plural, whence *chorda* in Latin, and *cord* in English; the stems having been formerly employed for the same purposes as those of *Schœnus.*

* *Spikes numerous. Stem rounded.*

1. S. *lacústris* L. (*Lake C.* or *B.*); spikelets in compound lateral umbels mostly shorter than the rounded almost leafless stem, glumes notched mucronate smooth ciliated, anthers bearded at the end, style trifid, achene bluntly trigonous obovate shining and polished. *E. B.* t. 666.

Plentiful on the margins of lakes and ponds. ♃. 7, 8.— *Root* much creeping. *Inflorescence* truly lateral, near the extremity of the stalks, which are very variable in size, 2—6 or 8 feet high, and as thick as a finger at the base. *Spikelets* often almost sessile. *Glumes* brown, fringed. *Stigmas* 2—3. *Fruit* obovate-triquetrous, accompanied by 5 or 6 *bristles*. The *stems* are much used for mats, chair-bottoms, &c., and they constitute a considerable article of trade. Coopers employ them for filling up spaces between the seams of casks, their spongy nature well adapting them to that purpose.

2. S. *Tabernæmontáni* Gmel. (*glaucous C.*); spikelets in compound lateral umbels mostly shorter than the rounded almost leafless stem, glumes notched mucronate rough with raised points ciliated, anthers glabrous at the end, style bifid, achene elliptical compressed (pale brown). S. glaucus *Sm.: E. B.* t. 2321.

Rivers and ponds, also where the water is brackish. Very abundant on both sides of the Clyde between Bowling Bay and Glasgow. ♃. 6—8.

** *Spikes numerous. Stem triangular towards the apex. Panicle naked, terminal, but often apparently lateral from the lower bractea being a mere continuation of the stem. Style bifid. Achene lenticular, compressed.*

3. S. *triqueter* L. (*triangular C.*); stem acutely triquetrous straight at the point, its upper sheath with a short broad triquetrous leaf, spikelets ovate or oblong-ovate clustered lateral sessile and stalked naked, glumes notched mucronate smooth fringed, the lobes rounded obtuse, stigmas 2, achenes smooth. *E. B.* t. 1694.

Muddy banks of rivers, near London. River Arun, near Amberley, Sussex. ♃. 8.— "*Anthers* with a short beardless point," *Bab.*, "denticulated at the point," *Kunth.*

4. S. *púngens* Vahl (*sharp C.*); stem triquetrous straight at the point, sheaths with long narrow keeled leaves, spikes 1—3 sessile lateral, glumes bifid mucronate smooth slightly fringed their lobes acute, stigmas 2, achenes smooth. *Bab. in E. B. S.* t. 2819. Sc. Rothii *Hoppe*. Sc. tenuifolius *DC.* Sc. triqueter *β. Sm. Engl. Fl.* i. 60. Juncus acutus maritimus, caule triquetro rigido, mucrone pungente. *Ray Syn.* 429.

On the wet sandy banks of St. Ouen's Pond, Jersey, first noticed by Sherard, as recorded in Ray's Syn. ♃. 6, 7.— Distinguished from *Sc. triqueter*, by its acutely lobed glumes. "*Anthers* with a subulate fringed point:" *Bab.*

5. S. *carinátus* Sm. (*blunt-edged C.*); stem rounded below bluntly triangular upwards, its sheaths leafless or the uppermost one with a leaf, cyme terminal decompound, involucre of 2 unequal leaves, spikelets oblong, glumes notched mucronate

slightly rough with raised points ciliated, stigmas 2, achenes smooth. *E. B.* t. 1983. S. trigonous *Roth.* S. Duvalii *Hoppe.*

Banks of rivers, very rare. About London, and on the banks of the Arun, Sussex. ♃. 7, 8.

*** *Spikes numerous. Stem triangular. Panicle leafy. Style 3-fid. Achenes somewhat trigonous.*

6. S. *marítimus* L. (*Salt-marsh C.*); stem leafy triangular, spikelets terminal clustered stalked and sessile, involucre of many foliaceous leaflets, glumes with a mucro between the acute segments of the notch. *E. B.* t. 542.

Salt-marshes, frequent. ♃. 7, 8. — *Root* creeping, sometimes swelling into knots or tubers. *Leaves* frequently longer than the stem, flat, acuminate. *Stigmas* 3. *Bristles* 3—4, accompanying the smooth, obovate-triangular *fruit.*

7. S. *sylváticus* L. (*Wood C.*); stem triangular leafy, cyme terminal many times compound, involucre of many foliaceous leaflets, glume entire obtuse with a small sharp point. *E. B.* t. 919.

Moist woods and banks of rivers. Not frequent in England, but abundant in South Kent. About Killin, at the head of Loch Tay, Perthshire; Lanarkshire, and in very many places in the south of Scotland. ♃. 7. — A handsome species, bearing innumerable small, greenish, ovate *spikelets. Stem* 2—3 feet high. *Leaves* broadly linear. *Bristles* scarcely longer than the achene, straight and sharply toothed, the teeth pointing downwards; in the allied *S. radicans* Schk. the spikelets are all solitary, and the bristles are long, capillary, flexuose, and puberulous at the apex.

**** *Spike solitary, terminal. Style 3-fid. Achene trigonous.* Bæothryon.

8. S. *pauciflórus* Lightf. (*Chocolate-headed C.*); stem rounded striate, its sheaths leafless, spike ovate naked, the 2 outer glumes the largest obtuse but shorter than the spike, achene reticulate-striate longer than the retrorsely hispid bristles pointed with the longish base of the style. *E. B.* t. 1122. S. Bæothryon *Ehrh.* Eleocharis pauciflora *Link.*

Moors in Scotland, not unfrequent. In England, rare; near Yarmouth, Norfolk; Anglesea, and Bangor in Wales. ♃. 7, 8. — Habit of small plants of *Eleoch. palustris. Fruit* pale, obovate, triquetrous, terminated by the rigid base of the withered *style*, not swollen at the base nor jointed, gradually tapering from the obtuse point of the fruit. *Roots* fibrous, sending out jointed runners.

9. S. *párvulus* Roem. and Sch. (*least C.*); stem without leaves or sheaths, spike terminal few-flowered, hypogynous bristles retrorsely hispid twice as long as the obovate oblong mucronate

smooth achene, root fibrous, radical leaves roundish. Eleocharis *Hook. Br. Fl.*

Found a few years ago on a muddy flat near Lymington, Hants; not now to be met with. ☉. 7. — Although supposed to be annual, the roots creep by means of capillary stolones. Mr. Babington describes this with "one close-pressed leafless sheath" on the stem, and "leaves filiform acute radical slightly dilated at the base and clasping the stem," probably meaning what we and others consider barren stems. In habit it is most related to *Isolepis fluitans*, of which some consider it a dwarf variety.

10. S. *cæspitósus* L. (*scaly-stalked C.*); stem rounded or slightly compressed striate, sheaths with subulate leaves, the two outermost glumes (fertile) longer than the very small spikes and terminating in long rigid points, achene pointed with the persistent base of the style shorter than the bristles which have a few erect teeth near the point. *E. B.* t. 1029. Eleocharis *Link.*

Moors and moist heathy places, every where. ♃. 6, 7. — A small species 2—3 inches high. *Bristles* 6. *Fruit* obovate, triquetrous, pale yellow, tipped with a mucro, as in most of the true *Scirpi*. This plant is called "*Deer's Hair*" in the Highlands, and yields an abundant food to sheep on the mountains in spring. Upon Ben Lawers a variety is sometimes found, having the larger of the 2 outer glumes an inch long, 4 times the length of the spike.

9. Eriophorum *Linn.* Cotton-grass.

Spikelets many-flowered. *Glumes* imbricated on all sides, nearly equal, all fertile or the lowermost sometimes empty. *Hypogynous bristles* several, protruded, very long and silky. *Style* 3-fid, deciduous. *Achene* triquetrous, tipped with the narrow base of the style or pointless. — Named from εριον, *wool*, and φερω, to *bear*.

* *Spikelets solitary. Bristles 4—6, at length crisped.*

1. E. *alpínum* L. (*Alpine C.*); stem triangular, leaves much shorter than the sheaths, spikes oblong-ovate. *E. B.* t. 311.

It was discovered in the Moss of Restenet, near Forfar, by *Mr. Brown*, and *Mr. G. Don*; but that bog is drained, and the plant has disappeared. ♃. 6.

** *Spikelet solitary. Bristles very numerous, straight.*

2. E. *vaginátum* L. (*Hare-tail C.*); stem above triangular, sheaths below with long setaceous leaves, above leafless obtuse inflated, spike ovate. *E. B.* t. 873.

Turf-bogs and barren moors, not unfrequent, especially in the mountainous parts of the north. ♃. 3—5.

3. E. **capitátum* Host (*round-headed C.*); stem rounded sheaths below bearing linear subulate leaves, above leafless inflated obtuse, spike almost globose. *E. B.* t. 2387.

"Ben Lawers, by the side of a rivulet, near perpetual snow:" *G. Don.* 4. 7, 8. — We fear that Mr. Don had mixed by mistake some foreign specimens in his possession with the *E. vaginatum*, which is very common on Ben Lawers, and which alone we have found there: most specimens distributed by him belong to *E. vaginatum*.

**** Spikelets several to each stem, peduncled or fascicled.*

4. E. *latifólium* Hoppe (*broad-leaved C.*); stem triangular upwards, leaves nearly flat below lanceolate contracted into a triangular point above the middle, stalks of the spikelets scabrous (usually elongated), bristles 2—3-times longer than the cuneate-obovate achene, glumes 1-nerved. E. polystachyon (*a*) *L.? Flor Suec.: Dickson: Sm. in E. B.* t. 563. E. pubescens *Sm.: E. B.* t. 2633.

Bogs, marshes, and heaths, rather rare. Cambridgeshire, Nottinghamshire; Northamptonshire, Yorkshire, and most of the northern counties. Anglesea. Berwickshire; Bonnington Woods, Lanarkshire; and perhaps in several other counties of Scotland. 4. 5, 6. — The figure in *E. B.* of Smith's *E. polystachyon* so completely resembles this species that we have no hesitation in referring it here, and Dickson's specimens of the same in his Herb. Br. fasc. 4. n. 1., are unquestionably the species; but it is probable that Smith had likewise in view a rather broad-leaved variety of the next.

5. E. *angustifólium* Roth (*narrow-leaved C.*); stem nearly round, leaves linear channelled and folded or sometimes nearly flat towards the base, triangular above the middle, stalks of the spikelets quite smooth, bristles 4-(or more)-times longer than the obovate achene, glumes 1-nerved. — *a.* leaves narrow folded at the base. *E. B.* t. 564. E. gracile *Sm.: E. B.* t. 2402. E. polystachyon *β*?, *γ. L. Flor Suec.* — *β.* leaves broader and somewhat flat towards the base. E. polystachyon *Sm.* (partly).

Turf-bogs, meadows, and moors, common. 4. 5, 6.— Having examined Don's specimens of Smith's *E. gracile*, from Ben Lawers, we can with confidence refer them to this species.

6. E. *grácile* Roth (*slender C.*); stem somewhat triangular, leaves narrow linear triquetrous throughout, stalks of the spikes densely scabrous-pubescent, bristles about twice as long as the narrow oblong triangular shortly stalked achene, glumes many-nerved. *E. B. S.* t. 2886. E. triquetrum *Hoppe*.

Bogs in England, rare. Near Hagnaby in Yorkshire, about 4 m. from Darlington. White Moor pond, Surrey, halfway between Guildford and the Woking station on the S. Western Railway. 4. 6, 7. — The above three species appear truly distinct: the first and last have scabrous or downy stalks to the spikelets, particularly *E. gracile*,

but differ widely in the foliage: *E. angustifolium* has an intermediate kind of leaf, but the stalks of its spikes are quite glabrous.

*** *Flowers imperfect.*

10 Kobrésia *Willd.* Kobresia.

Spikelets 1—2- (or 4-) flowered, included in a broad sheathing bractea, aggregate, and forming a compound spike. *Flowers* all imperfect. — *Barren fl.* in the fertile spikelets above the fertile one and within a convolute glume, in the sterile spikelets naked. *Stam.* 3. — *Fertile fl.* within a convolute glume. *Perigynium* 0. *Style* 1. *Stigmas* 3. *Achene* obtuse trigonal, surrounded by its convolute scale. *Perigynium* wanting. — In habit nearly allied to *Scirpus* and *Blysmus*, but the flowers are monœcious: it has not the urceolate *perigynium* of *Carex*.— Named in honour of *M. de Kobres*, of Augsburg, a patron of botany.

1. K. *carícina* Willd. (*compound-headed K.*); spikelets aggregated into a lobed spike, fertile spikelets below the sterile ones usually 1-flowered rarely with an upper rudimentary or staminate floret, sterile spikelets 1-flowered without a glume. Elyna *Mert. et Koch.* Schœnus monoicus *Sm.: E. B.* t. 1410.

Moors in Durham and Yorkshire. On Cronkley Fell, and about Widdy bank, in Teesdale Forest. On Shroine-ach-Lochan, Perthshire. ♃. 8.— Scarcely a span high, densely tufted, with narrow-linear *leaves*, shorter than the naked *stem*. *Bracteas* and *scales* remarkably convolute, brown. *Germen* oblong, scarcely trigonal.

11. Cárex *Linn.* Carex *or* Sedge.

Spikelets several-flowered; *flowers* imperfect, the two kinds in the same or in different spikelets. *Glumes* imbricated on all sides. — *Barren fl.* *Stam.* 2—3. — *Fertile fl.* *Perigynium* of one piece, urceolate, enclosing the *pistil*. *Style* 1. *Stigmas* 2—3. *Achene* compressed or triquetrous, very rarely (in *C. microglochin*) with an hypogynous bristle, included within the persistent *perigynium* (which is therefore in this genus supposed to form the external part of the *fruit*). — Name: supposed to be derived from *gearr* in Celtic, hence κειρω in Greek, to *cut* or *shear*, in allusion to its sharp-angled leaves and stems.[1]

[1] In this difficult genus, the species with *glabrous fruit* and terminal *barren spikelets* require to be entirely rearranged, many of them not strictly agreeing with the characters of the sections to which they are referred. Thus, some of those placed in the section with single barren spikelets have occasionally as many as 3, and a few of those of the section with 2 or more such spikelets exhibit frequently only one. The length of the fertile spikelets is also uncertain; and their being stalked or sessile, erect or drooping (even although we refer only to the lowermost ones), are characters equally subject to variation in the same species. The pubescence of the fruit is not always to be relied on. The number of the *stigmas* is generally constant, but occasionally we have seen only two in species which are described as having always three. The form of the *achene* varies considerably in

i. *Spikelet solitary, terminal. Stigmas* 2.

* *Dicœcious.*

1. C. *dioíca* L. (*creeping separate-headed C.*) ; spikelet simple dicœcious, fruit mostly ascending ovate shortly acuminate rough at the margin upwards, leaves and stem smoothish, root creeping. *E. B.* t. 543.

Spongy bogs. ♃. 5, 6. — A span high.

2. C. *Davalliána* Sm. (*prickly separate-headed C.*); spikelet simple dicœcious, fruit ovate much acuminate recurvate-deflexed rough at the margin upwards, leaves and stem rough, root tufted. *E. B.* t. 2123.

Lansdown, near Bath ; on the slope of a hill on which there is a clump of firs. ♃. 6.— *Stem* 1 span to 1 foot high.

** *Androgynous.* (*Stamens and pistil in the same spikelet.*)

3. C. *pulicáris* L. (*Flea C.*) ; spikelet simple, upper half with barren flowers, fruit lax oblong-lanceolate acuminate reflexed, stigmas 2. *E. B.* t. 1051.

Bogs, frequent. ♃. 5, 6.— A span high. *Stems* smooth. *Leaves* setaceous or filiform. *Fruit* dark brown, shining, smooth.

ii. *Spikelet solitary, terminal. Stigmas* 3.

4. C. *rupéstris* All. (*Rock C.*) ; spikelet linear with a few fertile lax flowers at the base, fruit obovate triquetrous rostrate appressed with an entire orifice scarcely longer than the obtuse or cuspidate persistent glumes. *E. B. S.* t. 2814. C. petræa *Wahl.* C. attenuata *Br.*

Discovered in 1836, on shelves of rocks extending from the small round lake at the top of Glen Callater, eastward to the "breakneck fall, Aberdeenshire;" Glen Dole, Clova; Inchnadamff, Sutherland; Ben Lawers. ♃. 7. — *Root* creeping. *Stem* 3—8 inches high, rough upwards. *Leaves* flat, ending in a long, attenuate, tortuous, rough, triangular point. *Barren flowers* most numerous: *fertile* 3—6, lax ; lower *glumes* sometimes acute or cuspidate: *Boott.*

5. C. *pauciflóra* Lightf. (*few-flowered C.*); spike simple of few flowers the uppermost barren, fruit lax lanceolate-subulate patent-reflexed longer than the deciduous glumes, stigmas 3. *E. B.* t. 2041. C. leucoglochin *Ehrh.*

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the same species, but usually within certain limits ; its surface, as to the marking, appears to us to be almost the same in every British species, being minutely and closely dotted with impressed points, at length, when ripe, almost quite smooth, and never rough with raised points or papillæ. Some valuable remarks on some of the species and their arrangement, have been made by Mr. John M'Laren in the *Botanical Gazette*, vol. iii. p. 17.

Not unfrequent on the Highland mountains, in moory places. Lowther hills, near Dalvene pass, and meadow above Drumlanrig Castle, Dumfries-shire. Crag Lake, Northumb. ♃. 6, 7. — *Fruit* pale-yellowish, striate.

iii. *Spikelets androgynous in a compound spike. Stigmas* 2.

* *Spikelets capitate, sterile at the end. Bracteas not foliaceous.*

6. C. *incúrva* Lightf. (*curved C.*); spikelets sterile at their extremity collected into a roundish head, bracteas membranaceous shorter than the spikelets, fruit broadly ovate acuminate nearly entire at the point, stem obtusely angular, leaves channelled. *E. B.* t. 927. C. juncifolia *All.*

Sandy sea-shores in the N. of Scotland. ♃. 6. — *Root* much creeping. *Stems* 2—4 inches high, curved. *Head* of *spikelets* large.

** *Spikelets alternate, sterile at their base. Bracteas not foliaceous. Root fibrous, not creeping.*

† *Fruit with a narrow membranaceous wing or margin.*

7. C. *ovális* Gooden. (*oval-spiked C.*); spikelets about 6 sterile at the base oval approximate, fruit as long as the glume ovate-acuminate compressed plano-convex striate with a broad membranous margin rough at the edge, the beak bifid. *E. B.* t. 306.

Bogs and marshy places. ♃. 6. — *Stems* 1 foot high, triangular. *Spikelets* brownish-green, shining. *Glumes* concealing the *fruit*. *Bracteas* small, uppermost ones resembling the glumes.

†† *Edges of the fruit acute or obtuse, not winged.*

8. C. *stelluláta* Gooden. (*little prickly C.*); spikelets few (3—4) sterile at their base roundish distant, fruit ovate much attenuate plano-convex sharply angled spreading, beak bifid serrate at the margin. *E. B.* t. 806.

Marshy and heathy places. ♃. 5, 6. — *Stem* from a span to a foot high. *Leaves* nearly as long as the *stem*. Distinguished by its few, much-beaked *capsules*, placed in small distant roundish *spikelets*, and spreading, when ripe, in every direction.

9. C. *cúrta* Gooden. (*white C.*); spikelets 4—8 sterile at their base rather distant or sometimes approximate elliptical, bracteas very minute (except the lower one), fruit erect broadly ovate acute plane above slightly convex beneath rather bluntly angled faintly striate longer than the membranous glumes, beak short. — *α.* beak of fruit emarginate not split. *E. B.* t. 1386. — *β. alpícola*, smaller, beak of fruit sometimes split to its base. C. Persoonii *Sieber*. C. vitilis *Fr.*

Bogs, in several places, not very general. Very common about Glasgow. β. Loch-na-gar; Ben Lawers; Ben Wyvis. Snailesworth dale, Yorkshire. 4. 6. — Distinguished by its pale elliptical *spikelets*, and imbricated, compressed, almost elliptical *fruit*. In α. the glumes are whitish with a green keel; in β. they are said to be pale with a white margin, and such we have seen, but on Ben Lawers they are as in α. The character taken from the beak of the fruit does not appear to us to be constant or important, and we cannot, therefore, look on β. except as a small or mountain variety.

10. C. *leporína* L. (*Hare's-foot C.*); spikelets 3 rarely 4 ovate contiguous, fruit elliptic rostrate plano-convex smooth-nerved with a scariose bidentate finally entire orifice scarcely longer than the ovate obtuse glumes which are scariose at the margins. *E. B. S.* t. 2815. C. Lachenalii *Schkh. Y.* f. 79. C. lagopina *Wahl.*

Rocks, on the west side of Loch-na-gar, and on Cairn Tuill, Aberdeenshire. 4. 7. — *Root* fibrous. *Stem* 4—8 inches high, smooth, rarely rough below the spike. *Leaves* a line broad, shorter than the stem. *Spikelets* brown. *Bracteas* broad, ovate, obtuse, the lowest aristate, rarely foliaceous and larger than the spikelet. *Achene* elliptic, plano-convex, pale yellow: *Boott.*

11. C. *elongáta* L. (*elongated C.*); spikelets numerous oblong lax rather distant sterile with minute pointed bracteas, fruit plano-convex oblong acuminate many-ribbed scarcely bifid at the point spreading longer than the glumes. *E. B.* t. 1920.

Marshes, rare. Aldwark, Yorkshire; near Sheffield; Over, Cheshire; Shropshire; Coggeshall, Essex; near Manchester. Ahagallan, county of Antrim, Ireland. 4. 6. — *Roots* tufted. *Stems* 1—1½ foot high, with 3 acute angles, rather rough, as well as the *leaves*. *Spikelets* brown. *Fruit* lax. *Achene* linear-oblong. A very distinct species.

*** *Spikelets alternate, lower ones distant. Bracteas foliaceous. Root fibrous.*

12. C. *remóta* L. (*distant-spiked C.*); spikelets several (small) sterile only at their base very distant, fruit longer than the glume oblong-ovate shortly acuminate plano-convex acutely angled bifid at the point, bracteas very long and narrow leafy reaching beyond the spike. *E. B.* t. 832. C. tenella *Schkh.*

Woods and moist shady places. 4. 6. — Whole plant very slender, pale green, 1—1½ foot high. Resembling the following in many respects; but "the *stem* has blunter angles; the lowest *bractea* is much longer than in that species; the *leaves* are compresso-canaliculate (with incurved sides) and much narrower; the glumes, too, are narrower, their nerve quite smooth, discontinued below the membranous summit:" *W. Wilson.* *Achene* ovate, pointed.

13. C. *axilláris* Gooden. (*axillary-clustered C.*); spikelets several sterile at the end very distant and compound below crowded and simple above, fruit longer than the glume oblong-ovate shortly acuminate plano-convex acutely angled, the beak deeply bifid, lowest bractea foliaceous as long as the spike, the middle ones setaceous shorter, upper ones with a point scarcely so long as the spikelet. *E. B.* t. 993.

Marshes, rare. Putney, by London; Earsham, Norfolk; Over, Cheshire; Manchester; York. 4. 6. — *Stem* with 3 acute angles; *spikelets* with more numerous *flowers* than the last, lower one or two compound. *Glumes* with 2, close, green, generally rough nerves, reaching to the summit, hence more rigid. *Achene* obovate, pointed. In the specimens we have examined, the spikelets are sterile only at the extremity, but from the observations of Gay, Babington, and M'Laren, there seems no doubt about their being sometimes, if not as frequently, sterile also at the base, both in this species and the next.

14. C. *Boenninghausiána* Weihe (*Boenninghausen's C.*); spikelets several sterile at the end crowded and simple above, fruit as short as the glume ovate-acuminate plano-convex acutely angled, the beak deeply notched on one side, lower bractea foliaceous as long as the spike, middle ones shortly setaceous scarcely so long as the spikelets, upper ones pointless. Colem. in *E. B. S.* t. 2910. C. Hailstoni *Gibs. in Phyt.* i. p. 870. C. axillaris β. *Bromf.* *M'Laren, in Bot. Gaz.* vol. iii. p. 20.

Marshes and by the sides of ponds, rare. Balls wood, Hertford; Congleton, Cheshire; Esher, Surrey; Pulborough and Hastings, Sussex; Isle of Wight. Killin, Perthshire; Culreach near Gordon Castle, Banffshire; Crichton Castle near Edinburgh. 4. 6. — 4—6 of the lower spikelets are compound and distant. Very closely allied to the last and often perhaps collected for it: the chief distinction lies in the more luxuriant spikes; in addition to which may be mentioned that it forms "large hassocks of a foot in diameter and height, sometimes bearing two or three hundred stems, which with the foliage spread outwards from the centre of the tuft, and thus occupy a circle of nearly 8 feet in diameter." *Glumes* pale brown with a scarious margin; *fruit* with the edges blunt at the base, sharp and serrated from below the middle. *Achene* ovate-elliptical, pointed.

**** *Spikelets alternate, sterile at the extremity, the lowest or most of them compound, all more or less approximated. Bracteas not foliaceous. Root fibrous.*

15. C. *paniculáta* L. (*great panicled C.*); spike panicled consisting of ovate spikelets arranged on elongated diverging branches of a common axis, fruit deltoid or subreniform plano-

convex faintly many-nerved margined above and ending in a aeuminate winged serrate bidentate beak, stem triquetrou with the angles very sharp and scabrous and the sides fla *E. B.* t. 1064.

Swampy and spongy bogs. 4. 6. — *Roots* densely tufted. Muc larger than the two next, and rougher, often 5 feet high. "Mos unpleasant to handle, and of all the British species the most harsh and unmanageable:" *Wilson*. *Leaves* broad. *Spike* 2—4 inches long *Bracteas* ovate, acute or cuspidate, rarely with a setaceous point. Bas of the fruit broad, truncate, with a central notch resembling the next and less distinctly stipitate than *C. teretiuscula*, obscurely many-nerved on both surfaces. The ripe *achene* scarcely differs from what we ob served in *C. paradoxa*, except by being usually a little more ovate, and bluntly triangular.

16. C. *paradóxa* Willd. (*paradoxical C.*); spike panicled consisting of spikelets arranged on short rather distant branches of a common axis, fruit deltoid gibbous on the back with numerous short prominent ribs near the base, beak bidentate serrulate, stem trigonous and scabrous in the upper part with convex sides. *E. B. S.* t. 2896. C. paniculata β. *M'Laren in Bot. Gaz.* vol. iii. p. 18.

Bogs. Ascham bog, and Heslington field, York. Ladiston near Mullingar, Ireland. 4. 7. — Closely allied to the last and to the next species, and chiefly differing by wanting a green line or keel on the convex side of the beak of the fruit; but if, as supposed by Mr. M'Laren, both *C. paniculata* and *C. teretiuscula* occasionally want this keel, then *C. paradoxa* may be viewed as an artificial species referable partly to the one, partly to the other. *Root* densely tufted, like that of *C. paniculata*, and the *spike* almost as compound. *Stems* and *leaves* nearly as in *C. teretiuscula; leaves* slender rough at the edges, triquetrous at the end. *Fruit* obscurely stipitate, with about 7 nerves on the convex side, and 9 on the other, all disappearing about the middle. *Achene* unequally convex on both sides, broadly ovate, pointed with the inconspicuous base of the style, suddenly contracted below into a short stalk.

17. C. *teretiúscula* Gooden. (*lesser panicled C.*); spike compound oblong or cylindrical consisting of ovate compact compound or simple spikelets with acute membranous scales, fruit subplano-convex with 3—4 central nerves on the convex surface stipitate ovate ending in an acuminate winged serrulate bidentate beak, stems trigonous and scabrous in the upper part with convex sides. *E. B.* t. 1065. C. Ehrhartiana *Hoppe*. C. pseudo-paradoxa *Gibs.*

Boggy, watery meadows, in various places. 4. 6. — This grows usually in separate tufts, with far narrower *leaves* than *C. paniculata*, of a glaucous hue, blunter *stems*, 18—30 inches high, their angles roughish. *Bracteas* membranous, ovate, acute, the lowest sometimes with setaceous points. *Spike* 1—1½ inch long. *Achene* narrow, obtuse, tapering at the base, bluntly triangular, turbinate. In this

and in *C. paniculata* a central line goes from the convex surface of the fruit, along the back, which is sometimes winged and then gives the beak a triangular form; but the beak is often as compressed as in *C. paradoxa*. A form of this species, with the habit of *C. paradoxa*, occurs near Manchester, and at Malham Tarn in Craven, Yorkshire.

18. C. *vulpína* (*great C.*); spikelets compound collected into a cylindrical crowded spike, fruit ovate-acuminate plano-convex nerved longer than the glumes divergent, beak finely serrate bifid, stem very acutely triangular, the angles scabrous, leaves broad. *E. B.* t. 307. C. nemorosa *Willd.*

Wet shady places, especially near water. 4. 6. — Two feet or more high; *stem* stout, rough, as are the margins of the broad *leaves*. *Bracteas* small, setaceous. *Spike* large, greenish. *Fruit* pale, rough at the margin of the lengthened *beak*, and bifid at the point. *Achene* oval, compressed, with a beak.

***** *Spikelets simple, alternate, sterile at their extremity. Root fibrous.*

19. C. *divúlsa* Gooden. (*gray C.*); spike elongated lax consisting of 5—6 simple spikelets which are subremote below with pale membranous acute scales, fruit ovate acute suberect obscurely nerved rough at the point with blunt margins longer than the mucronate pale membranous glumes, stem with rough angles. *E. B.* t. 629 (*young*). C. muricata β. *Wahl. M'Laren in Bot. Gaz.* vol. iii. p. 19.

Moist shady pastures, not rare. 4. 5, 6. — This species much resembles the next: in the *fruit* we can scarcely discern any difference, except that it is scarcely so acuminate, and is erect instead of diverging: the *achene* is rather narrower. The colour of the whole *plant* is paler, the *spikes* more elongated and slender, with more distant *spikelets*. "The slight difference in the distance of the spikelets is not a specific character, and I doubt whether the difference in the glumes is sufficient to constitute *C. divulsa* a distinct species, especially when we find such a suspicious intermediate form as the *C. muricata virens* of Andersson."—*Mc Lar.*

20. C. *muricáta* L. (*greater prickly C.*); spike oblong of 4—6 compact or approximate simple spikelets with brownish ovate pointed scales, fruit ovate-acuminate spreading with acute rough margins longer than the mucronate brown glumes, stem with rough angles. *E. B.* t. 1097. C. spicata *Huds.*

Marshy and especially gravelly pastures. 4. 5, 6. — *Stem* 1—2 ft. high, slender. *Bracteas* small, lanceolate, subsetaceous. *Fruit* yellow-brown, broad, rather large.

****** *Spikelets (simple) alternate, sterile at their extremity. Root (underground stem) creeping.*

21. C. *arenária* L. (*Sea C.*); lower spikelets fertile, upper ones sterile, intermediate ones sterile at the end, all crowded into an oblong interrupted spike, fruit ovate with a membra-

naceous margin nerved shorter than the acuminate glume bracteas membranaceous lower ones somewhat leafy, stem tr angular, leaves plane. *E. B.* t. 928.

Sandy sea-shore, frequent, where it is of great service in binding th soil. ♃. 6. — *Roots* excessively long and creeping. *Stems* roug 8 inches to a foot high. *Fruit* with a green membranous wing.

22. C. *intermédia* Gooden (*soft brown C.*); lower and uppe spikelets fertile, the intermediate ones sterile, all crowded int an oblong interrupted head, fruit with an acute narrow margi serrate upwards longer than the glumes whose midrib dis appears below the summit, bracteas membranaceous the lowe ones somewhat leafy, stem triangular with scabrous angle leaves plane. *E. B.* t. 2042.

Marshy ground and wet meadows. ♃. 6. — *Root* creeping, runnin deep into the mud. *Stems* 1—1½ foot high. *Spikes*, or heads spikelets, similar in general appearance to the last. *Fruit* large, n so distinctly winged as gradually flattened towards the margin, mor striate on its flat or inner side, the *beak* broader at its summit. *Ste* much taller, and the *leaves* less confined to the lower part of it.

23. C. *divísa* Huds. (*bracteate Marsh C.*); spikelets crowde into a somewhat ovate head, the lower ones simple or com pound with a leafy erect bractea at their base, glumes wit an excurrent midrib, fruit roundish-ovate convex on one sid slightly concave on the other, beak acutely bifid with finel serrate edges, stem roughish at the summit. *E. B.* t. 1096.

Marshy places, especially near the sea, principally in the east England, and in Angus-shire. ♃. 5, 6. — *Stems* about 1 foot high lower *bracteas* mostly with a long leafy point.

iv. *Terminal spikelet androgynous, the rest fertile. Stigmas* 3.

24. C. *Váhlii* Schkh. (*close-headed Alpine C.*); spikelet 1—4 roundish or oblong aggregated the terminal one wit barren flowers at its base, stigmas 3, fruit obovate triquetrou with a short notched beak scabrous above with crystallin points longer than the ovate somewhat obtuse glume, stem tri angular rough at the edges towards the summit. *E. B. S* t. 2666. C. alpina *Vahl.*

Rocks above the head of Loch Callater in Braemar; Glen Fiad (Fee) on the south side of Glen Dole, Clova. ♃. 7.

25. C. *canéscens* L. (*hoary C.*); spikelets 3—5 oblong, ter minal one barren at the base, fertile sessile contiguous to th upper one except the lowest which is on a short stalk and sub remote, fruit oblong-oval obtuse compressed at length tri gonous nerved bidentate rough with crystalline points shorte at the base of the spikelet than the ovate or oblong cuspidate

scales. C. Buxbaumii *Wahl.: E. B. S.* t. 2885. C. polygama *Schkh. X. G. g.* f. 76.

On a small island near Toom Bridge, in Lough Neagh, Ireland. ♃. 7.—*Root* creeping. *Stem* 1—2 ft. high, erect, acutely triangular, rough, leafy at the base, and clothed with purple sheaths which are torn and reticulated at their edges. *Leaves* straight, shorter than the stem. Middle *spikes* smallest, more or less approximate. *Bracteas* rough, auricled, but without sheaths, the lowest sometimes longer than the stem, upper ones setaceous. *Fruit* glaucous-green, stained with brown, shorter at the base of the spikelets than the cuspidate scales, which are brown with a pale green nerve.

26. C. *atráta* L. (*black C.*); spikelets 3—4 oblong, terminal one barren at the base fertile contiguous shortly-stalked inclined, lowest one on a longer stalk and rather distant at length drooping, lower bractea foliaceous, sheaths scarcely any, fruit elliptical triquetrous (when ripe) broader but rather shorter than the acute glumes, beak terete short bifid at the point. *E. B.* t. 2044.

On the Welsh mountains; Snowdon, rare. Rocky cliffs on the top of a hill near Hartfell, Dumfries-shire; Breadalbane, Clova, and other Highland mountains, Scotland. ♃ 6, 7.—About 1 foot high. *Leaves* usually broad for the size of the plant. *Glumes* dark brown, opaque. *Fruit* pale yellowish-brown, at first compressed, but as it ripens exhibiting 3 angles towards the base, at length triquetrous.

v. *Terminal spikelets barren*, 1—3 (*or more*); *the rest fertile. Stigmas* 2.

* *Beak of fruit entire.*

† *Margin of leaves involute when dry: sheaths not filamentose.*

27. C. *vulgáris* Fries (*common C.*); spikelets cylindrical erect, 1 rarely 2 barren, fertile 3—4, lower one shortly stalked, sheaths none, lower bractea subfoliaceous with small round dark auricles, glumes elliptic or oblong obtuse, fruit plano-convex elliptic or obtuse with filiform nerves which disappear upwards and an obsolete or evident entire beak. C. cæspitosa *Good.: E. B.* t. 1507. C. angustifolia *Sm. in E. Fl.* iv. p. 127. C. Goodenovii *Gay in Ann. Sc. Nat.* 2*d ser.* xi. p. 191.

Marshes and wet pastures, frequent. ♃. 5, 6.— A foot or more high. *Stem* weak, acutely triangular. *Root* creeping, laxly cæspitose. *Leaves* slender, their *sheaths* not filamentous. *Fruit* posteriorly flat, 3—5-nerved, anteriorly convex, 7—9-nerved. *Achenes* roundish, obtuse, with a short slender beak. We adopt the name given to this extremely common, but confused species, by Fries, being certainly older than that of Gay.

28. C. *Gibsóni* Bab. (*Gibson's C.*); "spikelets erect, barren 1, fertile 2—4 narrowed downwards slightly stalked, bracteas

foliaceous with short auricles, fruit lanceolate acute with ma nerves not reaching the summit and a short entire beak, ache broadly obovate very blunt with a short thick beak, ste acutely 3-angular or triquetrous rough towards the top *Bab. in Ann. Nat. Hist.* xi. t. 5. C. cæspitosa β. chlorocarp *Gibs.* C. vulgaris β. *M'Laren.*

Hebden Bridge, Yorkshire. ♃. 6. — Creeping. *Stems* 6—8 inch high. *Leaves* flat; *sheaths* not filamentose. *Glumes*, a third short than the *fruit*, which is gradually narrowed from below the midd to the top and nearly twice as long as the *achene*. — With this speci we are not acquainted, but that it is in an abnormal condition shown by the *perigynium* having lengthened out much beyond t *achene*. Dr. Boott suspects it to be *C. acuta*, whilst Mr. Babingt thinks it more allied to *C. vulgaris*. It is said to be now lost drainage; but may it not have reverted to its usual state, and be st in the neighbourhood?

29. C. *aquátilis* Wahl.? (*straight-leaved Water C.*); spikele erect, 1 or more barren, fertile 3—4 nearly sessile cylindric elongated attenuate below often acuminate with barren flowe at the extremity, sheaths none, bracteas long foliaceous, fru roundish-obovate without nerves broader than the glum with a very short entire beak, stem smooth obtusely triangula leaves long straight narrow-linear. *E. B. S.* t. 2758. rigida β. *Hook. Br. Fl.* ed. 2. p. 397.

On table-land in boggy situations in the mountains of Clova; ar in the valley by the bridge at Clova. ♃. 7, 8. — *Stem* 1—2 ft. hig *Achene* "roundish-obovate, blunt with a short beak." Dr. Boo doubts if this be really the *C. aquatilis* of Wahlenberg, since th author describes his plant as having scales much narrower than th fruit, which is not the case here, and the place of growth and si being so very different; in ipsis fluviis et lacubus"—"sæpe altitu dinem humanam attingens"—"ad radicem sæpius pollicem crassa It appears to be the species intended by Fries.

†† *Margins of leaves revolute when dry.*

30. C. *rígida* Good. (*rigid C.*); spikelets cylindrical or ob long, barren 1, fertile 2—4, lower one shortly stalked, sheath none, lower bractea subfoliaceous with small black subrotun auricles, glumes elliptic or oblong obtuse black, fruit oblong elliptic obtuse plano-convex without nerves with an obsolet entire beak, sheaths of leaves not filamentose. *E. B.* t. 204 C. saxatilis *Fl. Dan.* (not *L.*)

On Snowdon, the Cheviots, Hartfell, Dumfries-shire, and especiall the summits of all the more elevated Highland mountains. ♃. 6—8 — *Stems* 4—6 inches high, laxly cæspitose. *Leaves* flat, at lengt recurved at the margin, about as long as the firm acutely-triangula

stem, which is rough at top. *Achene* roundish, obtuse, with a slender beak.

31. C. *acúta* L. (*slender-spiked C.*); spikelets cylindrical elongated slender, barren 1—3, fertile 3—4 more or less remote and barren at top, lower peduncle often attenuate and interrupted at the base, sheaths none, bracteas long foliaceous, lower often surpassing the stem with pale or ferruginous elongated auricles, fruit oval biconvex nerved green with rusty stains, beak short entire, glumes dark lanceolate fertile ones acute, sheaths of leaves not filamentose. *E. B.* t. 580. C. gracilis *Curt.*

Moist meadows and wet pastures, frequent. 4. 5.—*Stems* 2—3 ft. high. *Stem* acutely triangular, rough. *Leaves* broad, flat, sheathing, in 3 rows, green. Fertile *spikelets* often very long, verticillate at the base, and pendulous in flower. *Glumes* about as long as the fruit, generally longer at the base of the spikelets, and shorter near the summit, but variable in that respect.

32. C. *cæspitósa* L. (*tufted Bog C.*); spikelets cylindrical, barren 1 rarely 2, fertile 2—3 often approximate erect thickish, lower one very shortly peduncled or sessile, upper often barren at top, sheaths none, lower bractea subfoliaceous abbreviate with large oblong pale auricles, fruit compressed elliptic or oblong closely imbricated nerved generally longer and broader than the black oblong obtuse or lanceolate scale, beak short entire, sheaths of leaves filamentose. *Gay in Ann. Sc. Nat.* 2*d ser.* xi. p. 194. C. stricta *Good.* (1792) (not *Lam.*): *E. B.* t. 914.

Marshes, common. 4. 4—6.—*Stems* 2 ft. or more high, densely cæspitose. *Leaves* subconduplicate, narrow, at length revolute on the margin, glaucescent, shorter than the firm acutely triangular rough *stem*. *Fruit* whitish, pulverulent, deciduous, always compressed, in 8—9 rows.—The name, and the remarks of Linnæus (*Iter Scaniæ*, p. 207. 241.), appears to refer to this species. He confounded it with *C. vulgaris* Fries, of which a specimen alone exists in his Herbarium. Hence Goodenough naturally considered it the true *C. cæspitosa* L., and called the present species *C. stricta;* a name, however, that had been given to an American species by Lamarck three years before Goodenough's paper on British *Carices* was read to the Linnæan Society.[1]

[1] Fries still retains the name of *stricta* for this species, and considers the *C. cæspitosa* L. to be different both from it and from *C. vulgaris*, though nearer the latter: he pronounces it a native of this country, on the authority of a specimen from Dr. Greville: his character is nearly as follows:—*C. cæspitosa* L.; spikes erect crowded, barren solitary, fertile subsessile oblong, bracteas with long auricles the lowest only leaflike slender and short, fruit elliptical obtuse biconvex spreading not nerved, equal to or longer than the scale, beak short entire, glumes lanceolate (dark purple with a paler keel), stems slender triquetrous, lower sheaths leafless slightly filamentose, two upper ones with leaves, leaves of the sterile shoots broad with a recurved margin. C. pacifica *Drej.*

The plant sent by Dr. Greville was, we believe, our *C. aquatilis;* with which, however, this character neither agrees as to the bracteas nor leaves.

** *Beak of fruit short, 2-toothed.*

33. C. *saxátilis* L. (*russet C.*); barren spikelets 1 or rarel 2, fertile ones ovate obtuse erect the lowest stalked with foliaceous bractea, sheaths none, glumes oblong, fruit spreadin ovate inflated nerved (nerves often obsolete) with a very shor beak bifid at the point, leaves acuminate with trigonous points —*α.* fruit usually obscurely nerved chestnut-brown, glume dark purple tipped with white, their midrib dark purple. C pulla *Gooden. E. B.* t. 2045.—*β.* taller, fruit prominentl nerved green or brown twice as long as the glume, glume fuscous the tip and midrib pale. C. Grahamii *Boott* in *E. B. S* t. 2923.

Near springs, on the higher regions of the Scottish mountains Ben Lomond; Breadalbane range, not unfrequent; Cairn Garadh near Ben Nevis; mountains about Loch Scavig in Skye. — *β.* Gle Fiadh, Clova. Ben Cruban near Killin; *Dr. Balfour.* — ♃. 6, 7 — *α.* Stem 6—8 inches (or in *β.* sometimes 2 feet) high. *Leave* remarkably acuminate, slightly keeled at the back, with trigonou points, resembling some of the narrow-leaved species of *Eriophorum Spikes* almost shaggy with the long white *stigmas. Scales* shining of a deep chocolate-brown, paler in *β. Fruit* at first pale, dark brow when ripe, usually much paler in *β.* As to *β.*, the habit is consider ably different, the fruit larger and longer, but we can find no certai character by which to separate it, except that the *nerves* of the *frui* (*perigynium*) are very prominent and conspicuous the whole length whereas in *α.* they are so obscure, particularly in the upper part, tha some authors describe its fruit as quite free from nerves: Dr. Boot considers it identical with *C. vesicaria β. alpigena* Fries, but Frie places it (as however he also does *C. saxatilis* itself) among thos with 3 stigmas, while we find only two.

vi. *Terminal spikelet barren, solitary* (*sometimes* 2 *in* 38, 39, *and* 53). *Fruit glabrous* (*or scabrous in* 53). *Stigmas* 3.

* *Fertile spikelets abbreviated and erect,* (*in* 41 *longish and sometimes drooping*).

† *Beak of fruit bifid.*

34. C. *exténsa* Gooden. (*long-bracteated C.*); sheaths very short (scarcely any) with extremely long narrow canaliculate foliaceous bracteas, fertile spikelets nearly sessile oblong, glumes slightly mucronate, fruit ovate ribbed with a short straight smooth acuminate beak bifid at the point, leaves very narrow canaliculate, stem smooth. *E. B.* t. 833.

Marshes, rare, near the sea, on the E. and S. of England. Near Liverpool and shores of the Menai. Coast of Fifeshire, Ayrshire &c., Scotland. Ireland. ♃. 6. — About 1 foot high. Quite distinct from *C. flava*, with which it has been confounded, in its

very narrow canaliculate *leaves*, never spreading and short-beaked *fruit*. *Achene* oblong-elliptical, tapering at both ends, triangular and smooth.

35. C. *fláva* L. (*yellow C.*); sterile spikelet cylindrical obtuse, fertile spikelets roundish-oval nearly sessile, lowest with a nearly included stalk, glumes obtuse, bracteas long leafy, fruit obovate turgid ribbed spreading with a long more or less deflexed or straight beak bifid at the point, stem bluntly triangular smooth. — *α.* sterile spikelets distinctly stalked, fertile ones rather distant, beak of fruit long deflexed distinctly rough-edged. *E. B.* t. 1294. — *β.* spikelets all approximated, beak of fruit long rough-edged straight. C. flava. *β.* lepidocarpa *Anderss.* C. Œderi *Bab.?* — *γ.* spikelets somewhat approximated paler small, fruit much smaller suddenly attenuated into a short straight nearly smooth beak. C. Œderi *Ehrh.*: *E. B.* t. 1773. C. extensa *β. M'Laren in Bot. Gaz.* vol. iii. p. 25.

Turfy bogs, frequent. — *β.* moist sandy places or heaths. — *γ.* perhaps not rare; marsh (now drained) near the mouth of the Powburn, Ayrshire (1850). 4. 5, 6. — *Stems* 6—8 inches or a foot high. *Bracteas* very foliaceous, the lower one resembling the broad acuminated *leaves*. *Spikelets*, and indeed the whole plant, of a yellowish hue. *Achene* obovate, with 3 nearly equal flat sides and thick angles, very minutely and closely dotted with impressed points, at length nearly quite smooth. Our *β.* is what is usually called *C. Œderi* by British collectors. The *γ.* is *C. Œderi* of Andersson and the botanists of the north of Europe, and has much more the aspect of *C. extensa*, but the achene is quite as in *C. flava*. It is difficult to say what *C. Œderi* of Smith is; the figure in *E. B.* is not good, but the accompanying description points to our *γ*: it is, however, probable that Smith had both the *β.* and *γ.* in view at a later period.

36. C. *fúlva* Gooden. (*tawny C.*); sterile spikelets 1 or rarely 2, fertile ones oblong-oval distant, sheaths elongated shorter than the peduncles, bracteas foliaceous, fruit broadly-ovate ascending glabrous ribbed acuminated into a straight rough-edged beak bifid at the point, glumes acute (not mucronate). — *α.* stem acutely 3-angular scabrous. *E. B.* t. 1295. C. distans *β. M'Laren in Bot. Gaz.* vol. iii. p. 26. — *β.* stem bluntly 3-angular smooth or scabrous near the summit, fertile spikelets on longer stalks, beak smoother with a more distinct membranaceous orifice. C. speirostachya *Sw.*: *E. B. S.* t. 2770. C. Hosteana *DC.* C. Hornschuchiana *Hoppe.* C. distans *γ. M'Laren.*

Boggy meadows, not unfrequent. — *β.* West of Scotland. 4. 6. — *Stem* 1 ft. high, with the habit of *C. distans*, but smaller; with shorter, more lax, paler coloured and fewer-flowered *spikes*, acute, not mucronate, *glumes*, and an obovate, nearly smooth *achene*.

37. C. *distans* L. (*loose C.*); barren spikelets 1—2 on long

stalks with obtuse scales, fertile 2—3 remote erect oblong stalked the lower stalks about twice longer than the sheathing bracteas upper ones included, glumes mucronate, fruit ovate triquetrous equally ribbed pellucidly punctate smooth or rough at the upper margins and at the edges of the narrow short bifid beak. *Boott.*—*E. B.* t. 1234.

Muddy marshes near the sea, probably in many places. Anglesea; Kent; Yorkshire. Guernsey. Montrose; near Inverkeithing, Fifeshire; Edinburgh; Ayrshire. ♃. 6.—*Stems* 8 inches to 1 or 1½ foot high, slender. *Spikelets* very distantly placed, their rather long *peduncles* entirely concealed by the sheathing bases of the *bracteas*. *Glumes* rather pale brown. *Fruit* green, inclining to brown when ripe. *Achene* ovoidoblong, pointed at both ends, nearly smooth.

38. C. *punctáta* Gaud. (*dotted-fruited C.*); barren spikelet 1 rarely 2 with obtuse ferruginous scales, fertile 3 rarely 4 cylindrical erect stalked with sheathing bracteas, fruit ovate tumid glabrous shining pellucidly punctate diverging of a light green obsoletely nerved except at the margins with a linear bidentate beak larger than the ovate short aristate scales, which are pale ferruginous with a green nerve. *Boott.*—*Schkh. Car. Suppl.* tab. 6. f. 1. C. Helvetica *Schleich.* C. distans β. *Deslongch. Fl. Gall.* p. 297.

Marshy grounds near the sea. About a mile W. of Charlestown, Cornwall. Vazon bay, Guernsey. Dingle, co. Kerry; Glen Gariff, and Berehaven, co. Cork, Ireland. ♃. 6.—*Root* creeping, composed of strong woody fibres. *Stem* 12—18 inches high, erect, smooth, leafy at the base. *Leaves* shorter than the stem. *Barren spikelets*, rarely geminate: *glumes* rarely acute or subaristate, the lowest sometimes bracteæform: *fertile* more or less remote, the two upper subapproximate, the lowest rarely 3 inches from the middle one. *Bracteas* with striate sheaths, varying in length. *Peduncles* rough. *Beak* about one third the length of the *fruit*. *Achene* triangular, ovate-rhomboidal, pointed at both ends, very minutely and closely dotted.—Differs from *C. distans* in its smaller size, its light green, more approximate spikes, its more erect stem, and in its fruit.

39. C. *binérvis* Sm. (*green-ribbed C.*); barren spikelet solitary with obtuse scales, fertile 3—5 the upper ones sometimes subapproximate, the lower remote erect cylindrical often elongated bearing barren flowers in their upper half and some of them occasionally compound at the base, the lower stalks longer than the sheathing bracteas, glumes mucronate, fruit ovate-triquetrous with a smooth rather broad bifid beak, and two principal green submarginal nerves on the outer surface, beak broad bifid. *Boott.*—*E. B.* t. 1235.

Dry heaths and moors, frequent. ♃. 6.—Generally taller, and in every part more rigid, than the last. *Glumes* and especially the

fruit, more highly coloured, the latter more acutely triquetrous with two nerves near the margin on the back, which are always green, though the rest of the fruit be more or less brown. *Achene* obovate, tapering at the base.

40. C. *lævigáta* Sm. (*smooth-stalked beaked C.*); fertile spikelets remote erect or drooping cylindrical stalked, stalks longer than the elongated sheaths, bracteas foliaceous, all the glumes acuminate or mucronate, fruit ovate triangular striate with rather a long acuminate beak deeply bifid at the point. *E. B.* t. 1387.

Marshes and boggy thickets, in several places both of England and Scotland. Anglesea. Near Belfast. 4. 6. — *Stem* 2—3 ft. high. *Leaves* broad, but rather short. There is rarely more than one *sterile spike*, which is always triquetrous, with obtuse or sometimes acute *glumes*. *Achene* obovate, tapering at the base. Often in the young state confounded with *C. sylvatica*, and then most easily distinguished by its more compact spikelets and darker glumes; it flowers too a month later.

41. C. *depauperáta* Gooden. (*starved Wood C.*) ; fertile spikelets erect remote with very few (3—4) flowers, the stalks much longer than the sheaths, bracteas foliaceous, fruit large nearly globose inflated terminating in a long bifid beak with rough edges. *E. B.* t. 1098.

Dry woods, rare. Godalming, Surrey ; Charlton wood, Kent. Near Forfar ; *G. Don.* 4. 5, 6. — *Stem* 1—1½ ft. high. *Spikelets* very distant ; their few *flowers*, and large inflated beaked *fruit*, decidedly marking the species. Mr. Don cultivated it in his garden, which we fear was the only locality for it near Forfar.

42. C. *vaginata* Tausch (*short brown-spiked C.*) ; barren spikelet solitary, fertile ones 1—3 subcylindrical erect lax-flowered distant stalked, the stalks longer than the elongated loose sheaths, bracteas subfoliaceous, fruit smooth obsoletely nerved elliptic-lanceolate triangular with an acuminate obliquely bifid recurved beak longer than the ovate glume. C. phæostachya *Sm.: E. B. S.* t. 2731. C. salina *Don : Herb. Brit.* n. 216. C. Michelhoferi *Sm.* (not *Schk.*) : *E. B.* t. 2293. C. Scotica *Spreng.* C. panicea β. *Wahl.*

Highland mountains. Craig Cailleach and Meal-cuachlar, near Killin ; Cairngorum and Ben Mac Duibh, Aberdeenshire ; about the falls at the head of Glen Fiadh, and in the ravines of the White Water, Clova. 4. 7. — "Differs from *C. panicea* in its broader leaves shorter bracts in the inflated sheaths, green triangular (not inflated) fruit with an emarginate beak and obtuse ferruginous glumes." *M'Laren.* The name given by Tausch in 1821, being the oldest, we adopt it.

†† *Beak of fruit entire.*

43. C. *panicéa* L. (*Pink-leaved C.*); barren spikelet solitary fertile ones about 2 subcylindrical lax-flowered distant stalked the stalks longer than the close elongated sheaths, bracteas leafy fruit subglobose somewhat inflated obtuse glabrous with a short terete beak. *E. B.* t. 1505.

Marshy places and bogs, common. ♃. 6. — *Stems* 1—1½ ft. high. *Leaves* rather broad, glaucous, rough at the edges, much resembling as Sir J. E. Smith observes, the foliage of *C. glauca*; but the characters of the two are widely different. *Glumes* dark brown, the keel green. *Fruit* greenish-brown.

44. C. *palléscens* L. (*pale C.*); barren spikelet 1 sessile, fertile spikelets peduncled oblong-cylindrical approximate scarcely pendulous much longer than the very short sheaths, bracteas foliaceous, fruit obovate-elliptical tumid striate obtuse glabrous. *E. B.* t. 2185.

Marshy places, frequent. ♃. 6. — A foot or more high, *Leaves* slightly downy. *Spikes* obtuse, pale green. *Fruit* very obtuse, without a beak. *Achene* narrow-elliptical, tapering at both ends.

** *Fertile spikelets abbreviated, stalked, drooping.*

† *Beak of fruit entire.*

45. C. *capilláris* L. (*dwarf capillary C.*); fertile spikelets few-flowered lax drooping, the stalks twice as long as and included within a common sheath, fruit oblong-obovate with a short beak rather longer than the membranaceous ovate obtuse deciduous glumes. *E. B.* t. 2069.

Plentiful on some of the Highland mountains, especially the Breadalbane range. Ben-Ghlo. Hart-fell, Dumfries-shire. ♃. 6, 7. — *Stem* 2—6 inches high. *Leaves* mostly radical, scarcely half the length of the *stem*, soft. One single *bractea* includes, with its sheathing base, the lower part of all the peduncles, which are thus somewhat corymbose; rarely there is a distant *fertile* spikelet. *Sterile spikelet* single, frequently on a shorter stalk than the others, and therefore appearing as if below them. *Fruit* dark brown, shining. *Achene* obovate.

46. C. *rariflóra* Sm. (*loose-flowered Alpine C.*); fertile spikelets 2—3 upon long stalks narrow-oblong very few-flowered lax drooping, sheaths very short mostly membranous, bracteas subsetaceous, fruit bluntly triangular ovate with a short entire beak faintly nerved nearly as long as the glume, glume very broad and concave obtuse minutely apiculate folded round the fruit. *E. B.* t. 2516. C. limosa γ. *Wahl.*

Bogs, rare. Head of Glen Dole, south-east side of the Little Culrannoch, and head of Canlochan, Clova mountains; also in

Sutherland, as Oikel, Ben Hope, Ben Lyal, &c.. ♃. 6. — Creeping. *Stems* about 6 inches high. *Leaves* about half an inch long, but broader than those of the next, with which it has been united by both Wahlenberg and Kunth. *Glumes* obtuse, very deep brown, with a pale dorsal nerve usually running out and forming a very minute mucro at the end, forming a striking contrast with the pale coloured fruits.

47. C. *limósa* L. (*Mud C.*); fertile spikelets 1—3 upon very long stalks oblong-ovate densely flowered drooping, sheaths very short, bracteas subsetaceous or lower ones leaflike, fruit roundish compressed ribbed with a very short beak, about as long as or shorter than the ovate pointed glume. — *α.* leaves narrow-linear channelled rough at their edges throughout, bracteas subsetaceous, lower glumes slightly acuminate scarcely longer than the strongly ribbed fruit, upper ones longer and narrower. *E. B.* t. 2043. — *β. irrigua*, leaves broader flat rough only near the point, the lower bracteas foliaceous, lower glumes ovate- or narrow-lanceolate much acuminate longer than the faintly ribbed fruit, upper ones often broader and shorter. C. irrigua *Hoppe: E. B. S.* t. 2895. C. limosa *β. Wahl.*

Bogs and marshes. Rare in England, mostly found in the northern and mountainous parts; more frequent in Scotland and Ireland. — *β.* Muckle Moss, Northumberland. Terregles, Dumfries-shire; "Benina" near Loch Lomond; Clova mountains; hill of Knock, Dunfermline. ♃. 6. — Creeping. *Stems* 8—10 inches high. *Leaves* very narrow. *Fertile spikelets* usually 2. *Glumes* dark brown, subapiculate. *Fruit* greenish-brown. In *β.* the lower *glumes* are usually very narrow and much attenuate, becoming broader and shorter upwards, while this proportion is reversed in *α.*: in both the narrowest glumes are either empty or with stamens, and the broadest are scarcely so broad as the fruit.

†† *Beak of fruit bifid.*

48. C. *ustuláta* Willd. (*scorched Alpine C.*); fertile spikelets about 3 oval densely-flowered drooping, the stalks about twice the length of the loose sheaths, bracteas setaceous, fruit elliptical compressed (black) shortly acuminate rough at the edges near the apex, glumes ovate-oblong acuminate narrower and rather shorter than the fruit. *E. B.* t. 2404. C. atrofusca *Schk.*

Ben Lawers, very rare; *G. Don.* ♃. 7. — Tufted, and scarcely creeping. *Stem*, in the only Scotch specimen we have seen, about 6 inches, in Lapland ones almost a foot high. *Leaves* short, broad, principally from near the root. *Fertile spikelets* 2, usually 3, on slender drooping stalks, and of a deep purple-black colour; *barren* ones rather smaller, and of a dark rusty-brown. *Fruit* very obscurely nerved, perhaps nerveless.

**** Fertile spikelets elongated (sometimes short in 53), stalked, drooping.*

† *Beak of fruit bifid.*

49. C. *sylvática* Huds. (*pendulous Wood C.*); barren spikelets solitary, fertile about 4 filiform rather slender loose-flowered slightly drooping, stalks about twice as long as the elongated sheaths, bracteas foliaceous, glumes ovate acute diaphanous with a green keel, fruit broadly ovate acuminate, beak long smooth cleft at the point, leaves narrow. *E. B.* t. 995.

Moist woods, frequent. ♃. 5, 6.—Similar to *C. strigosa*; but the *spikelets* are shorter, broader, and on longer stalks; *fruit* very different, glabrous, and so acuminate as to terminate in a long *beak*. *Glumes* longer in proportion. *Spikelets* sometimes compound. Linnæus tells us that this plant, when carded and dressed, is employed by the Laplanders to protect their feet from the cold.

50. C. *Pseudo-cypérus* L. (*Cyperus-like C.*); barren spikelets solitary, fertile 3—6 densely-flowered cylindrical upon long footstalks drooping, bracteas very leafy, lowermost sometimes sheathing the others without sheaths, glumes setaceous scabrous, fruit oblong very much acuminate ribbed, beak long deeply cloven. *E. B.* t. 242.

Moist places, by the sides of lakes and ponds; not very general. ♃. 6.— *Stems* 2—3 feet high, acutely triangular. *Leaves* ½ an inch broad. One of the best marked, and most beautiful of the genus.

†† *Beak of fruit entire or emarginate.*

51. C. *strigósa* Huds. (*loose pendulous C.*); barren spikelets solitary, fertile about 4 slender filiform loose-flowered nearly erect, the lower stalks a little longer than the elongated sheaths upper about equal to their bracteas foliaceous, glumes elliptic-lanceolate diaphanous with a green keel, fruit oblong-lanceolate acuminate at both ends nerved slightly recurved truncate at the point, beak scarcely any, leaves rather broad. *E. B.* t. 994.

Groves and thickets, in several parts of the east and middle of England. Cotterell wood, Cheshire. Arniston woods, Edinb. ♃. 5, 6. — *Stem* 1—2 feet high. *Glumes* a little shorter than the *fruit*.

52. C. *péndula* Huds. (*great pendulous C.*); barren spikelets solitary, fertile 4—6 cylindrical densely-flowered very long and drooping, sheaths nearly equal to the stalks lower elongated upper very short, glumes ovate mucronate, fruit ovate with a short trigonous notched beak, leaves broad. *E. B.* t. 2315.

Moist wooded and shady places, not very general. ♃. 5, 6. —

Stem 3—5 ft. high. Well distinguished by its long, pendulous, cylindrical *spikelets*, and closely imbricated *fruit*. *Achene* elliptical, pointed at both ends.

53. C. *glaúca* Scop. (*glaucous Heath C.*); barren spikelets 1—3, fertile 2—3, cylindrical or ovate at length drooping densely-flowered on long slender stalks, sheaths short scarcely any, bracteas foliaceous, glumes ovate, fruit obovate-globose scabrous or smooth, beak very short entire.—*α*. fertile spikelets cylindrical, glumes acute. C. recurva *Huds.*: *Sm. E. B.* t. 1506.—*β*. fertile spikelets cylindrical, glumes obtuse, fruit smaller. C. Micheliana *Sm.*: *E. B.* t. 2236.—*γ*. fertile spikelets ovate. C. stictocarpa *Sm.*: *E. B. S.* t. 2772.

Moist meadows, moors, groves and alpine rocks. ♃. 6. — *Leaves* mostly radical, very glaucous. *Stems* usually about 1 foot, sometimes 2 ft. high. *Fruit* closely placed, brownish when ripe, closely dotted with depressed points, often pellucid, punctate when young, usually scabrous with a kind of abortive pubescence, or rather scattered papillæ, which are sometimes quite wanting in *γ*.

vii. *Terminal spikelets* (1 *or more*) *barren. Fruit hairy or downy. Stigmas* 3.

54. C. *clandestína* Gooden. (*dwarf silvery C.*); barren spikelets solitary, fertile 1—3 stalked remote about 3-flowered concealed by the membranaceous sheaths of the leafless bracteas, fruit broadly obovate-triquetrous slightly downy contracted at the base with an entire oblique mouth, leaves longer than the stems channelled rough rigid. *E. B.* t. 2124. C. humilis *Leyss.* C. argentea *Vill.*

On the limestone rocks at St. Vincent's, Bristol; Downs, near Boyton, and in great abundance on Salisbury Plain, between Stonehenge and Heytesbury, Wiltshire; Brean Down, Weston-super-mare. ♃. 5. — Remarkable for the few *flowers* of its fertile *spikelets*, which are concealed by the comparatively large membranaceous *sheaths*, as the short *stems* are by the *leaves*. The name given by Leysser is unquestionably the oldest, but has been generally abandoned in favour of the much more expressive one of *clandestina*.

55. C. *digitáta* L. (*fingered C.*); barren spikelet solitary sessile, fertile 2—3 distant on long stalks erect filiform lax longer than the barren one, sheaths membranaceous obliquely truncate, lower ones with a setaceous bractea, glumes broadly obovate apiculate about the length of the fruit, fruit obovate-triquetrous downy on a short stalk, beak short nearly entire, leaves plane. *E. B.* t. 615.

Rare, in woods in limestone countries. Near Bath and Bristol; Wind Cliff, Monmouthshire; limestone ledges of Cleeve Hill, 4 m. from Cheltenham; Thorp-arch and Mackershaw wood, Ripon, Yorkshire. ♃. 5. — *Root* of tufted fibres. *Stem* 8—10 inches high. *Leaves* soft, shorter than the stem.

56. C. *præ'cox* Jacq. (*vernal C.*); barren spikelets solitary fertile 1—3 oblong approximate sessile or on a peduncle th length of the sheath, lowermost sheath short (scarcely any) lower bracteas leafy short, glumes broadly ovate acuminate fruit downy obovate-oblong scarcely acuminate truncate at th point trigonous the sides nearly flat, root creeping. *E. B.* t 1099.

Dry pastures and heaths. 4. 4, 5. — *Stems* 3 inches to a foo high. *Leaves* short, rather broad. Lower *bracteas* small, but leafy ; upper ones very minute. *Achenes* obovate-oblong, trigonous, with nearly flat sides. The numerous yellow *anthers* are conspicuous at an early season of the year.

57. C. *collína* Willd. (*mountain C.*); barren spikelets solitary quite sessile with obtuse or retuse glumes, fertile 1—3 roundish approximate sessile, sheaths short membranaceous lowermost with usually a subulate bractea, glumes broadly ovate usually emarginate mucronate, fruit very downy obovate-oblong trigonous the sides nearly flat, beak very short notched, root tufted fibrous. C. montana *Schk: E. B. S.* t. 2924. C. pubescens *Gaud.*

In a field by the roadside towards Eridge, about a mile south of Tunbridge Wells, Sussex; Limestone Wood, between Tintern and S. Arvans about 4 m. from Chepstow, Monmouthshire; near Penmoyle rocks, Gloucestershire. 4. 4, 5.— *Root* somewhat creeping, but tufted. *Stems* 4—7 inches high. *Leaves* narrow. *Fruit* densely pubescent, almost hairy, whitish, the beak with a dark purple margin at its mouth. *Achene* obovate-oblong, triangular, with a stout trigonous beak that projects beyond the mouth of the *perigynium.* Smith has shown (E. Fl. iv. p. 113.) that *C. montana* L. is the same as *C. pilulifera*; and the name having been applied to several other species, it is preferable to adopt that given by Willdenow.

58. C. *pilulífera* L. (*round-headed C.*); barren spikelets solitary with acute glumes, fertile 1—3 roundish approximate sessile, sheaths none, lowermost bractea subulate scarcely foliaceous, glumes broadly ovate mostly acuminate, fruit downy obovate-globose with 2 principal opposite ribs the sides rounded, beak short bifid, root tufted fibrous. *E. B.* t. 885. C. montana *L.* C. filiformis *Fl. Dan.* t. 1048.

Moory ground, frequent. 4. 6. — *Stems* varying much in height, from 6—12 inches, slender. *Achene* subglobose, acuminate at the base, pointed with the stout base of the style which seldom projects beyond the mouth of the *perigynium.*

59. C. *tomentósa* L. (*larger downy-fruited C.*); glabrous, barren spikelets solitary with ovate-lanceolate glumes, fertile 1—2 somewhat approximate nearly sessile shortly cylindrical obtuse, sheaths scarcely any, lowermost bractea foliaceous, glumes broadly ovate acute, fruit densely downy obovate sub-

trigonous with rounded sides slightly notched at the point with scarcely any beak, root creeping. *E. B.* t. 2046.

Meadows, near Merston Measy, Wiltshire. 4. 6. — A well marked and very rare species, no station but the above-mentioned being known for it in Britain. *Achene* obtuse with a short beak, constricted at the base.

60. C. *filifórmis* L. (*slender-leaved C.*); glabrous, barren spikelets 2 with oblong-lanceolate somewhat acute glumes, fertile 2—4 distant nearly sessile oblong-cylindrical, sheaths scarcely any, bracteas foliaceous long and narrow, glumes oblong-ovate cuspidate, fruit very pubescent ovate-oblong tapering into a short deeply bifid beak, leaves slender channelled, root creeping. *E. B.* t. 904.

Boggy marshes, rare; chiefly found in Scotland. Cheshire, and Anglesea. 4. 5. — *Stem* 1—2 ft. high. *Leaves* slender, their margins involute, filamentous at their bases near the roots. Closely allied to *C. tomentosa*, with which it was confounded by Lightfoot and Hudson.

61. C. *hírta* L. (*hairy C.*); hairy, barren spikelets 2—3, fertile 2—3 distant stalked nearly erect cylindrical, sheaths elongated, bracteas long foliaceous, glumes elliptic-lanceolate much acuminate ciliate towards the point, fruit oblong-ovate with a long beak deeply bifid at the point. — *α.* lower sheaths elongated nearly equal to the stalks of the oblong cylindrical fertile spikelets. *E. B.* t. 685. — *β.* lower sheaths scarcely half as long as the stalks, fertile spikelets loose-flowered compound at the base.

Wet pastures and woods, frequent. — *β.* Inland Ferry, near Dunoon, Argyleshire. Yorkshire? 4. 5, 6. — *Stems* 1—2 feet high, more or less hairy in every part, sometimes shaggy, especially on the side of the sheath opposite to the bractea and near the apex: Mr. Babington, however, mentions a glabrous form with which we are unacquainted. *Mr. Turner* found a variety in Yorkshire, with the lower part of the fertile spikelets compound at the base; but we are not certain if it had the long stalks of our var. *β.*, sometimes attaining 7 inches, although the sheath be not more than 2 inches, being thus protruded 5 inches beyond it.

viii. *Barren spikelets 2 or more. Fruit glabrous or scabrous. Stigmas 3.*

* *Bracteas with sheaths.*

62. C. **hordeifórmis* Wahl. (*Barley C.*); barren spikelets usually 2, upper one on a long stalk, fertile 3—4 erect oblong cylindrical or ovate, upper ones approximate on stalks about the length of their sheath, lowermost remote on a stalk sometimes twice as long as the sheath, bracteas long leafy, glumes broadly ovate with a hispid point or obtuse and pointless scariose at the margin, fruit (large) scarcely twice as long as

the scale ovate or oblong acuminate nerved scabrous flat or the one side rounded on the other with two ciliate-serrate winged margins, beak bifid.

Forfarshire, rare: *T. Drummond.* 4. 6. — We suspect that Mr. Drummond found the specimens among his collections, without any memoranda as to where they were gathered, and drew the conclusion that they were obtained in one of his excursions, merely from the other plants accidentally mixed with them. There seems to be no doubt that they were obtained from his own garden, and were among the curiosities which the late Mr. Don had amassed there; so that the species ought to be expunged from our Flora.

** *Bracteas without sheaths.*

63. C. *ampullácea* Gooden. (*slender-beaked Bottle C.*); barren spikelets 2—3, fertile 2—3 distant shortly stalked cylindrical erect, sheaths none, bracteas foliaceous, glumes lanceolate about half as long as the fruit, fruit crowded somewhat membranaceous subglobose inflated striate suddenly contracted into a long narrow beak bifid at the point, stem bluntly triangular. *E. B.* t. 780.

Bogs and marshes, more abundant in Scotland than England. 4. 6. — Differs from *C. vesicaria* in the smooth and nearly rounded *stem*, in the channelled glaucous *leaves*, and in the fruit, which is brownish and not half so large, with a narrower *beak* and of a different shape. According to Andersson this species becomes, at a considerable elevation, *C. rotundata*; while *C. vesicaria* becomes *C. saxatilis*: this last we do not believe.

64. C. *vesicária* L. (*short-beaked Bladder C.*); barren spikelets 2—3, fertile 2—3 distant stalked cylindrical slightly drooping, sheaths none, bracteas foliaceous long, glumes lanceolate much shorter than the fruit, fruit somewhat membranaceous broadly ovate inflated striate gradually acuminated into a subulate beak bifid at the point, stem acutely triangular. *E. B.* t. 779.

Bogs and marshes, apparently most frequent in the north. 4. 5, 6. — *Stems* 1½—2 ft. high, acutely angled. *Leaves* usually broad, sometimes narrow and involute. *Fruit* tawny, very large, shining, much inflated, but not suddenly constricted. We possess what appears to be an abnormal state of this species, collected by Dr. Greville in England, we believe in Derbyshire, where there are 6 spikelets all fertile, and all except the lowest one approximate.

65. C. *paludósa* Gooden. (*lesser common C.*); barren spikelets about 3 with obtuse or slightly cuspidate glumes, anthers with a very minute point or pointless, fertile spikelets about 3 cylindrical obtuse erect, sheaths none, bracteas very long foliaceous, glumes narrow pointed or awned, fruit subcoriaceous ovate or oblong-ovate striate with a short usually bifid beak. *E. B.* t. 807. C. Kochiana *DC.*

Banks of rivers and ditches, common. ♃. 5, 6. — *Stem* 2—3 ft. high, with rough angles. *Leaves* very broad, keeled, rough. *Fruit* compressed; the *beak* sometimes entire at the point, according to Kunth. *Stigmas* occasionally only 2, and *achene* lenticular: *Boott.* Fertile *glumes* "commonly tipped with a brown rough point or awn." *Sm.* Specimens which we collected (July 1854) in a brackish marsh half way between Largs and Wemyss Bay, in Ayrshire, have usually only 2 stigmas and a linear oblong achene: these Mr. Babington is inclined to refer to *C. prolixa* of Fries, but Dr. Boott considers them as certainly belonging to *C. paludosa*; the sterile glumes are apparently cuspidate from their being much corroded, but when entire are quite obtuse; the fruit does not seem to ripen.

66. C. *ripária* Curt. (*great common C.*); barren spikelets 3—5 approximate with acuminate glumes, anthers tipped with a short awn, fertile spikelets 3—4 broadly cylindrical acute sessile or the lower ones stalked, sheaths none, bracteas very long foliaceous, glumes oblong pointed, fruit oblong-ovate with a short deeply bifid beak. *E. B.* t. 579.

Sides of ditches and rivers, common. ♃. 5. — Larger than the last, with much broader *leaves* and *spikelets*. *Fruit* convex on the back, sometimes on both sides. Well distinguished from *C. paludosa* by the acuminate glumes of the sterile spikelets and the conspicuously mucronate *anthers:* we are indebted to Dr. Bromfield for pointing out this last character (Phyt. iii. p. 146.).

Ord. CVII. GRAMINEÆ[1] *Juss.*

(See Tabs. VI.—IX.)

Florets usually perfect, sometimes imperfect, sometimes neuter (without either stamens or pistil), solitary, or 2 or more

[1] Here we have a structure in the flower, and a habit in the whole plant so different from those of other flowering-plants, that, in the former especially, peculiar names have been given to its different parts, which it may be desirable to explain. The floral coverings, as they are termed, are *glumaceous* or chaffy. The *outer* of these, which do not immediately contain stamens or pistil, and are composed of one (see Tab. 8. f. 36. *a.*) or two (Tab. 6. f. 3. *a.*) pieces, were called by Linnæus the *calyx;* the pieces are the *glumes* or *valves*, and they resemble a calyx in the two-valved, single-flowered genera, but often they include many flowers (Tab. 7. f. 23. *a.*), and with justice are considered *bracteas* or leaves of an *involucre:* in *Lcersia* and *Nardus* they are wanting. The *inner* generally of a thinner texture, was by Linnæus and Smith named *corolla;* its pieces, one (Tab. 6. f. 3. *b.*) or two (Tab. 6. f. 5. *b.*) in number *glumes* or *valves:* these constitute the true *perianth* of Brown, and are called *paleæ* by Beauv. and Kunth, *valvulæ* by Brown, Trinius, and Ehrenberg, and *glumellæ* by Link; which last we adopt as having a special reference to this order. Within this, and at the base of the germen, are generally 2 collateral, rarely 1, small *scales* (Tab. 9. f. 42. *a.*), *nectary* of Linn. and Sm., *lodiculæ* of Beauv. and most others, and *squamulæ hypogynæ* of Brown. — In this order few botanists are yet agreed what ought to constitute a genus, and therefore we have not, with very few exceptions, either subdivided the genera, or changed the nomenclature adopted in previous editions; indeed, in a local Flora we do not

imbricated on a common axis or rachis contained within a involucre (*calyx* L.) consisting of 2 (sometimes 1, rarely none valves or *glumes*, the whole constituting a *locusta* or *spikelet Perianth?* (*corolla* L.) glumaceous: that of the fertile floret usually of 2 dissimilar *glumellas* (*paleas* or *valvelets*); lower o outer simple, usually keeled or with a midrib; inner or upper with 2 lateral or dorsal nerves (hence probably of 2 united) sometimes one, sometimes both are wanting: of the barren florets of 1—2 *glumellas:* of the neuter ones often rudimentary or wanting. *Stamens* hypogynous, 1—6, rarely indefinite usually 3. *Anthers* 2-celled, attached by their back about the middle, versatile. *Ovary* superior, 1-celled, with 1 *ovule* usually with 2 (rarely 1, or 0) minute hypogynous scales (called *lodicules*, abortive *stamens?*). *Styles* 2, rarely 1 (simple or bifid) or 3 (perhaps only 1, and 2—3-cleft). *Stigmas* often plumose. *Pericarp* (a *caryopsis*) closely incorporated with the seed. *Embryo* lenticular, external, lying on one side at the base of the farinaceous *albumen.*—Stems *or* culms *usually fistulose, generally simple and herbaceous, knotted, sometimes branched rarely shrubby.* Leaves *one to each node, with a sheath slit longitudinally on one side, having often a membranous appendage* (*ligule*) *at its summit* (Tab. 9. f. 42. *b.* Flowers *small, solitary or in spikelets, which are panicled* (Tab. 9. f. 42. *d.*) *or spiked* (Tab. 9. f. 42. *c. e. f. g.*).—A most natural Order, and one of the highest importance in the whole Vegetable Kingdom comprehending the true *Grasses.*

A. *Stamens* 2. *Styles* 2.

1. Anthoxanthum. Panicle spiked. Spikelet with one central fertile floret. Glumes 2. Glumellas 4, the two inner ones (the perfect floret) awnless, the two outer (each a neuter floret) awned and larger.
20. Hierochloe. Panicle lax. Spikelets awnless, with one central perfect diandrous floret, and a barren triandrous one on each side.
32. Bromus. Spikelets panicled, awned, with 3 or more perfect flowers.

B. *Stamens* 3. *Style* 1. *Glumes* 0.

2. Nardus. Spike simple, unilateral. Florets sessile, solitary. Glumellas 2, outer one with a long subulate point.

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think it desirable, if characters are thereby required of greater difficulty than can easily be surmounted by a student. We have likewise, for a similar reason, retained the same arrangement of the genera as formerly, although it is certainly liable to great objections: the number of flowers in a spikelet vary in the same genus and even in the same species, as in *Catabrosa*, some species of *Poa*, and *Melica*, &c. and there is a variety of one species of *Bromus*, which we can only distinguish by very minute generic characters from *Poa* (*Glyceria*) on one hand, and *Lolium* on the other, although the genera themselves are naturally distinct.

C. *Stamens* 3 (*very rarely* 1) *in some or all of the florets. Styles or Stigmas* 2.

§ *Spikelets pedicellate, panicled. Panicle often very compact, so as to resemble a spike.*

* *Spikelets with a single perfect floret; imperfect florets* 0; *neuter ones, when present, either rudimentary or consisting of empty glumellas, much smaller than the perfect one.*

† *Glumes* 0.

3. Leersia. Panicle spreading. Spikelets laterally compressed, keeled, awnless. Glumellas inclosing the caryopsis, lower one much the larger.

†† *Glumes* 2.

‡ *Panicle spiked. Glumes as long or longer than the floret.*

4. Alopecurus. Glumes usually connate at the base. Glumella 1, with a dorsal awn; neuter florets 0.
5. Phalaris. Glumes strongly keeled. Glumellas 2, awnless, glabrous or equally pubescent, at length hardening and inclosing the caryopsis. Neuter florets 1—2, rudimentary, coriaceous, and scale-like.
6. Ammophila. Glumes keeled, awnless, diverging. Glumellas 2, subcoriaceous below, and with a tuft of short silky hairs at the base. Neuter floret 1, coriaceous, rudimentary and scale-like.
7. Phleum. Glumes pointed, or with a short terminal awn, parallel. Glumellas 2, membranaceous, awnless. Caryopsis free.
8. Lagurus. Glumes tapering into a long subulate point, fringed to the end. Glumellas 2, membranaceous; outer one with two terminal bristles, and a dorsal jointed awn.
10. Gastridium. Glumes membranaceous, acute, entire, awnless, ventricose at the base. Glumellas 2, membranaceous, truncate or toothed at the end, with a long straight awn below the point.
12. Polypogon. Glumes notched at the end, with a long straight awn. Glumellas unequal; outer one obtuse, awned almost at the very extremity.

‡‡ *Panicle lax, spreading or contracted* (*not spiked*).

§ *Glumes as long or longer than the floret.*

‖ *Spikelet or floret broader than thick* (*dorsally not laterally compressed*).

9. Milium. Panicle spreading. Glumes herbaceous, flattish on the back. Glumellas glabrous, awnless, at length hardened and inclosing the caryopsis. Neuter floret 0.

‖ *Spikelet or floret either rounded on the back* (*or laterally compressed*).

11. Stipa. Panicle erect. Glumellas cartilaginous, outer one involute, ending in a very long twisted awn, which is jointed at the base and finally separates at the joint.
5. Phalaris. Panicle somewhat contracted. Glumes keeled. Glumellas uniformly hairy, awnless, at length hardened on the caryopsis.

13. Calamagrostis. Panicle loose. Floret surrounded with long silky hairs. Glumellas membranaceous.
14. Agrostis. Panicle loose. Floret glabrous, or with a small tuft of hairs at the base. Glumellas membranaceous. Caryopsis free.

§§ *Glumes shorter than the floret, unequal.*

17. Molinia. Panicle somewhat contracted. Glumes acute, lower one 1-nerved. Glumellas at length cartilaginous and covering the caryopsis. Neuter floret, when present, subulate.
18. Melica. Panicle lax. Glumes rounded on the back, several-nerved. Glumellas glabrous, awnless, at length cartilaginous and inclosing the loose caryopsis. Neuter floret club-shaped.
15. Catabrosa. Panicle spreading. Glumes obtuse, lower one 1-nerved. Glumellas membranaceous.

** *Spikelets* 2—3-*flowered; perfect florets* 2, *or solitary with* 1—2 *barren* (*triandrous florets*) *or a neuter floret as large as the perfect one.*

† *Spikelets compressed laterally or somewhat rounded.*

‡ *Panicle lax, spreading or contracted.*

§ *Fertile florets* 2. *Barren* 3-*androus ones none.*

15. Catabrosa. Spikelets scarcely compressed, awnless. Glumes obtuse shorter than the florets, unequal, 1-nerved. Glumellas 2, nearly, equal, glabrous on the keel and the base, truncate and erose at the summit.
26. Poa. Spikelets compressed, awnless. Glumes shorter than the florets, 2-nerved. Glumellas 2, herbaceous, entire; outer one keeled and hairy on the keel below the middle, scariose and bluntish at the end (not acuminated).
31. Festuca. Spikelets compressed, awnless on the back. Glumes shorter than the florets, narrow and acute, lower 1-, upper obsoletely 3-nerved. Glumellas 2, herbaceous; outer one rounded on the back below, 3-ribbed, acuminate, not silky on the ribs.
16. Aira. Spikelets compressed. Glumes 2, unequal, lower 1-, upper 1—3-nerved, about as long as the florets. Glumellas hairy at the base; outer one awned at the back with or without faint lateral nerves, toothed or entire or bifid, but not setigerous, at the end. Caryopsis glabrous.
33. Avena. Spikelets compressed. Glumes 2, membranaceous, upper one 3—7 nerved. Glumellas hairy at the base, at length cartilaginous and firmly inclosing the caryopsis; outer one with a long twisted geniculate awn, with 2 points or bristles at the summit.
18. Melica. Spikelets rounded on the back, awnless. Glumes 2, membranaceous, as long as the florets, nearly equal, 5-nerved. Outer glumella rounded on the back, 7-nerved, entire, glabrous, at length cartilaginous. and inclosing the loose caryopsis. Neuter floret club-shaped.
17. Molinia. Spikelets awnless. Glumes 2, membranaceous, acute, much shorter than the florets, unequal, 1-nerved. Outer glumella rounded on the back 3—5 nerved, entire, glabrous, at length cartilaginous and inclosing the loose caryopsis. Neuter floret subulate.
27. Triodia. Spikelets compressed, rounded on the back, awnless. Glumes 2, as long as the florets, 3-nerved. Glumellas subcoriaceous, hairy at the base; outer one 3-toothed at the end.

§§ *Spikelets of one perfect and* 1—2 *triandrous florets.*

19. Holcus. Florets 2, triandrous; lower perfect, upper barren, awned.
20. Arrhenatherum. Florets 2, triandrous; upper perfect, with a short bristle at the point; lower barren, with a long twisted geniculate awn above the base of the outer glumella.
21. Hierochloe. Florets 3, awnless; central one perfect, diandrous; barren ones lateral, triandrous.

‡‡ *Panicle spiked.*

22. Koeleria. Panicle rounded. Spikelets distichous, without a bractea at the base. Glumes unequal; upper one with several nerves. Glumellas membranaceous; outer one keeled, entire, pointed.
23. Sesleria. Panicle rounded. Spikelets laterally compressed, without a bractea at the base. Glumes about as long or longer than the florets, nearly equal, 1-nerved. Glumellas membranaceous; outer one keeled, jagged, with a short terminal bristle.
30. Cynosurus. Panicle unilateral. Spikelets distichous, with a pectinate bractea at its base. Glumes much shorter than the florets, equal, 1-nerved. Glumellas membranaceous; outer one linear-lanceolate, mucronate or awned at the end.

†† *Spikelets broader than thick, dorsally (not laterally) compressed. Perfect floret* 1, *its glumellas hardening on the caryopsis; neuter as large as the perfect one, of one glumella.*

9. Milium. Panicle lax, diffuse. Glume 1, the lower one wanting. Neuter glumella herbaceous, and resembling the glume.

††† *Spikelets flat in front, gibbous or rounded on the back (not laterally compressed). Perfect floret* 1, *its glumellas hardening on the caryopsis; barren or neuter as large as the perfect one, of* 1—2 *glumellas.*

24. Panicum. Panicle in a racemose somewhat unilateral compound spike. Spikelets without bristles at the base, awned, arranged on one side of a flattened partial rachis. Glumes 2; lower one the smaller.
44. Digitaria. Spikelets without bristles at the base, awnless, arranged on one side of a spreading partial rachis, and forming a digitate or shortly racemose compound spike. Glumes 2; lower one the smaller and sometimes obsolete.
25. Setaria. Panicle in a compound cylindrical dense spike. Spikelets 1—3 together, surrounded by an involucre of bristles and separating from it.

*** *Spikelets with* 3 *or more perfect florets, laterally compressed. Glumes* 2.

† *Outer glumellas with a dorsal awn from or below the middle.*

16. Aira. Panicle lax. Spikelets laterally compressed, with 3 perfect florets. Glumes about as long as the florets, membranous. Glumellas 2; outer ones hairy at the base, 1-nerved, jagged at the end, with a slender dorsal awn from below the middle.
33. Avenna. Panicle lax. Spikelets laterally compressed, with 3 or more perfect florets. Glumes membranaceous, about as long as the spikelet. Glumellas lanceolate, hairy at the base, herbaceous

but at length cartilaginous and firmly inclosing the caryopsis; outer one with a long geniculate dorsal awn, with two points or bristles at the summit.

†† *Outer glumellas with or without a terminal or subterminal awn or bristle, but no dorsal awn.*

‡ *Florets not mixed with long silky hairs.*

§ *Glumes about as long as the rest of the spikelet.*

27. Triodia. Panicle racemed. Spikelets compressed, with 3—4 fertile flowers. Glumes as long as the florets, 3-nerved. Glumellas 2; outer one somewhat coriaceous, rounded on the back, hairy at the base, 3-toothed at the end, middle tooth straight.

23. Sesleria. Panicle spiked, rounded. Spikelets laterally compressed, with 3 or more perfect florets. Glumes nearly equal, 1-nerved, about as long as the florets. Glumellas naked at the base, membranaceous; outer one keeled, jagged, with a short terminal bristle.

§§ *Glumes conspicuously shorter than the rest of the spikelet.*

‖ *Panicle spiked, or somewhat contracted and rigid.*

22. Koeleria. Panicle spiked, rounded. Spikelets without a pectinate bractea, distichous, with 3—4 perfect florets. Glumes unequal, membranaceous, keeled, shorter than the florets. Glumellas membranaceous, naked at the base; lower one 3-nerved, keeled, pointed, entire.

30. Cynosurus. Panicle spiked, unilateral. Spikelets with a pectinate bractea at the base, distichous, with 3—5 perfect florets. Glumes 2, equal, membranaceous, much shorter than the florets, 1-nerved, keeled, shortly awned. Glumellas membranaceous, linear-lanceolate; outer one mucronate or awned at the end.

26. Poa. Panicle unilateral. Spikelets without a pectinate bractea, with 3—5 perfect florets. Glumes rather unequal, 1-nerved, keeled, awnless; outer glumella scarious on the margin, prominently 5—7-nerved.

‖‖ *Panicle or raceme more or less lax, spreading or contracted.*

15. Catabrosa. Panicle spreading. Spikelets awnless, scarcely compressed, ovate, with 3 fertile florets. Glumes 1-nerved, much shorter than the florets. Glumellas glabrous on the keel and at the base, membranaceous, very obtuse. Caryopsis free.

17. Molinia. Panicle contracted. but rather lax. Spikelets lanceolate, awnless, with 3 perfect semicylindrical florets and a subulate rudimentary neuter one. Glumes 1 nerved, much shorter than the florets. Glumellas 3—7-nerved, glabrous, entire at the end, at length cartilaginous and inclosing the caryopsis.

26. Poa. Panicle lax or contracted. Spikelets ovate or linear, compressed or cylindrical, awnless. Glumes 2, shorter than the florets, more or less membranaceous. Glumellas 2, somewhat ovate, bluntish, rarely tipped with a minute point. Caryopsis free.

28. Briza. Panicle lax. Spikelets awnless, much compressed laterally, cordate-deltoid, with 3 closely imbricated perfect florets. Glumes nearly equal, broad. Outer glumella navicular, obtuse, rounded on the back, membranaceous with a scarious margin; inner one small, flat.

29. Dactylis. Panicle with the secondary branches short and very dense, subsecund. Spikelets with 3--4 perfect florets, compressed. Glumes shorter than the florets, unequal; outer one keeled. Outer glumella keeled and ciliated on the back, 5-nerved, lanceolate, with a short bristle close to the summit, inclosing the caryopsis.

31. Festuca. Panicle lax or coarctate. Spikelets many-flowered, more or less laterally compressed, without a bractea at the base. Glumes unequal, membranaceous, much shorter than the spikelet, usually keeled. Glumellas lanceolate; outer one rounded on the back, very acute or awned at the point, the lateral nerves slightly converging and disappearing below the summit. Styles terminal.

32. Bromus. Panicle lax, spreading, or coarctate. Spikelets many-flowered, more or less laterally compressed, without a bractea at the base. Glumes unequal, much shorter than the florets, usually keeled. Glumellas 2, herbaceous; outer one rounded on the back, 2 of the lateral nerves usually uniting and forming an awn below the bifid summit. Styles from below the summit of the caryopsis.

‡‡ *Florets mixed with long silky hairs.*

34. Phragmites. Panicle lax. Spikelets distichous, with 3—4 distant perfect flowers and a barren 3-androus one at the base, all enveloped with long silky hairs attached to the axis. Glumes membranaceous, rather shorter than the florets, unequal. Glumellas membranaceous; lower one tapering with a long narrow subulate point.

b. *Spikelets spiked, either sessile or shortly stalked, and arranged in a simple or compound spike or spike-like raceme.*

* *Spikelets inserted on different sides of the rachis, sometimes slightly unilateral. Spikes usually simple.*

35. Elymus. Spikelets in pairs, each containing 2—4 perfect florets. Glumes 2, collateral, awnless. Glumellas 2, covering and usually incorporated with the caryopsis.

36. Hordeum. Spikelets ternate, 1—2 usually neuter or barren; fertile ones with one perfect floret and a rudimentary neuter one. Glumes 2, collateral, awned. Glumellas 2.

37. Triticum. Spike simple. Spikelets solitary, sessile, transverse to the rachis, many-flowered. Glumes 2, opposite, nearly equal; outer one with several nerves.

26. Poa. Spike simple or compound, somewhat unilateral. Spikelets approximate, without a pectinated bractea at the base, several-flowered. Glumes 2, opposite; outer one 1-nerved.

30. Cynosurus. Spikelets approximate, with a pectinate bractea at the base, shortly stalked, with 2—5 perfect flowers. Glumes equal, membranaceous, 1-nerved.

38. Brachypodium. Spike simple. Spikelets solitary, sessile, transverse to the rachis, remote, at first cylindrical, many-flowered. Glumes 2, opposite, unequal; outer ones with several nerves, much shorter than the contiguous lowermost floret. Inner glumella strongly ciliated on the nerves.

31. Festuca. Spikelets distant, solitary or in pairs, sessile or nearly so, placed edgewise to the rachis, with 6—10 fertile florets, awnless. Glumes 2, opposite, unequal, much shorter than the lowermost contiguous floret.

39. Lolium. Spike compressed, simple or sometimes slightly compound. Spikelets solitary, approximate, sessile, placed edgewise to the

rachis, with 3 or more perfect florets. Glumes solitary, or 2 wit the one next the rachis small; outer with several nerves, as lon or longer than the lowest contiguous floret.

40. LEPTURUS. Spike simple, cylindrical. Spikelets solitary in eac joint imbedded in alternate cavities on opposite sides of the rach and placed edgewise to it. Glumes 2, coriaceous, collateral on th outside of the cavity and covering it.

41. KNAPPIA. Spikelets shortly stalked, solitary, arranged on two sid of the simple rachis and forming a simple unilateral spike-lik raceme, 1-flowered, awnless. Glumes 2, opposite, truncate, nearl equal, rather longer than the floret, membranaceous, 1-nerve Outer glumella hairy, membranaceous, jagged; inner sometime wanting.

** *Spikelets (with 1 perfect flower) arranged only on one side of the parti rachis, and forming a racemose or digitate compound spike or raceme.*

42. SPARTINA. Partial spikes erect. Spikelets sessile, laterally com pressed, with scarcely any rudimentary neuter floret. Glume very unequal. Glumellas compressed, lanceolate, acuminat Styles united to near the middle. Stigmas elongated.

43. CYNODON. Partial spikes spreading. Spikelets almost sessil laterally compressed, with a rudimentary neuter floret. Glume nearly equal. Glumellas compressed; outer one cymbiform. Styl distinct. Stigmas oval.

44. DIGITARIA. Partial spikes spreading. Spikelets in pairs on sho unequal pedicels, flat in front, rounded on the back, with a neut floret in front as large as the perfect one. Styles distinct.

A. *Stamens* 2. *Styles* 2. (Gen. 1.)

1. ANTHOXÁNTHUM *Linn.* Vernal-grass. (Tab. VI. f. 1.)

Panicle spiked. *Spikelets* with 1 perfect central floret, an two outer larger neuter ones. *Glumes* 2, very unequal; uppe the longer. *Glumellas* of the perfect floret 2, awnless; of th neuter florets single, awned.—Name: ἀνθος, *a flower*, an ξανθος, *yellow*; from the yellowish hue of the spikes, especiall in age.

1. A. *odorátum* L. (*sweet-scented V.*); panicle spiked oblon often interrupted at the base, awn of the upper neuter glu mella longer than the upper glume. *E. B.* t. 647: *Parn Gr.* t. 8.[1]

Meadows, woods, and pastures, abundant, often very alpine. 4 5, 6. — A foot high, its agreeable smell in the act of drying, lik that of *Woodruff* (*Asperula odorata*), gives the well-known scent t new-made hay. *Leaves* short. *Panicle* compact, spiked, yellow i age. *Glumes* very unequal. Mr. Brown first pointed out the tru structure of the spikelets of this genus: previously the two neute florets were considered by some an inner pair of glumes, by other

[1] We refer here to Dr. Parnell's Grasses of Britain: the plates, especially o the 2nd part, are very accurate; except perhaps as regards the hypogynous scale and the styles and stigmas.

an outer corolla or perianth. *A. gracile* differs by the awns of both the neuter florets being shorter than the upper glume. *Stamens* only 2, whereby this genus departs perhaps from all our other grasses, except *Bromus diandrus* and *Hierochloe*, in which last the two lateral barren florets are triandrous. *Stigmas* very long, linear.

B. *Stamens* 3. *Style and Stigma* 1. (Gen. 2.)

2. NÁRDUS *Linn.* Mat-grass. (Tab. VI. f. 2.)

Spike simple, unilateral. *Spikelets* 1-flowered. *Glumes* 0. *Glumellas* 2; the outer one keeled with a long subulate point. *Stigma* elongated, filiform, papillose. — Name, from ναρδος, formerly given to an odoriferous substance, but not applicable in this case.

1. N. *stricta* L. (*Mat-grass.*) *E. B.* t. 290: *Parn. Gr.* t. 2.

Moors and heaths, most abundant. 4. 6. — A grass of simple structure, growing in short tufts so coarse and rigid that cattle will not eat it. *Culms* and *leaves* setaceous. *Spike* long, erect, slender, grooved, and toothed at short distances for the insertion of the florets. *Glumellas* lanceolate: outer one coriaceous, purplish-green, tapering gradually into an awn; inner smaller, awnless, membranous. The only species of the genus.

C. *Stamens* 3 (*or very rarely* 1) *in some or all of the florets. Styles or stigmas* 2.

a. *Spikelets very rarely sessile and spiked, usually pedicellate and panicled.* (Tab. IX. f. 42. *d.*) *Panicle often very compact so as to appear spiked.* (Tab. IX. f. 42. *c.*) (Gen. 3—34.)

* *Spikelets with a single perfect floret, and no barren ones; neuter florets, when present, either rudimentary or consisting of empty glumellas much smaller than the perfect ones.* (Tab. VI. f. 3—13.) (Gen. 3—14.)

3. LEÉRSIA *Soland.* Cut-grass.

Panicle lax, often contracted. *Spikelets* compressed laterally. *Glumes* wanting. *Glumellas* 2, chartaceous, navicular, much compressed, awnless, inclosing the loose caryopsis; lower one much the broader. *Stamens* 3 or 6, rarely 1. — Named in honour of *John Daniel Leers*, a German botanist, who published in 1757 the *Flora Herbornensis*.

1. L. *oryzoides* Sw. (*European C.*); panicle effuse the branches not appressed, spikelet half-elliptical strongly ciliated triandrous, leaves very rough, ligule short. *E. B. S.* t. 2908.

Ditches, drains of water, meadows, brooks, and pools, rare. Near Henfield, and Arundel, Sussex; Mole river, Surrey; Boldre river,

near Brockenhurst Bridge, Hants. ♃. 8—10. — For this a dition to the British Flora, we are indebted to Mr. Borrer: t same species is found on the Continent, but is most abundant North America.

4. ALOPECÚRUS *Linn.* Fox-tail-grass. (Tab. VI. f. 3.)

Panicle spiked. *Spikelets* compressed laterally. *Glumes* nearly equal, usually connate at the base, membranaceou about as long as the floret. *Glumella* solitary, with a dors awn above the base. *Neuter florets* 0. — Named from αλωπη a *fox*, and ουρα, a *tail*.

1. A. *praténsis* L. (*Meadow F.*); culm erect smooth, panic spiked cylindrical obtuse, glumes lanceolate acute hairy connat at the base, awn twice the length of the glumella. *E. B* t. 759: *Parn. Gr.* t. 4.

Meadows and pastures, common. ♃. 5, 6. — An excellent gras for cattle. *Culm* 1½ to 2 ft. high. *Panicle* of a yellow-green colour with silvery hairs. *Glumes* and *glumella* much ciliated in this a in all the species, remarkably compressed.

2. A. *alpínus* Sm. (*Alpine F.*); culm ascending smooth, pa nicle spiked ovate obtuse, glumes ovate abruptly acute hair united at the base, awns scarcely longer than the glumella upper sheath inflated thrice as long as its lanceolate leaf *E. B.* t. 1126: *Parn. Gr.* t. 4.

Lochnagar, Aberdeenshire. Sides of streams among the Clov and Canlochen mountains, frequent, particularly near Loch Wharral banks of the Glashieburn, Glen Prosen, and the marshy ground be tween Clova and Loch Lee. ♃. 7, 8. — This plant, whic ever at first sight, is distinguishable by its ovate *panicle* and short broad upper *leaf* with its inflated *sheath*, seems quite unknown to Continenta collectors, and is rare in this country, though plentiful in North America and Spitzbergen.

3. A. *agréstis* L. (*slender F.*); culm erect scabrous above panicle cylindrical acuminate, glumes acute almost glabrous united as far as the middle, awn more than twice the length o the glumella. *E. B.* t. 848: *Parn. Gr.* t. 3.

Fields and way-sides, in England, scarcely indigenous in Scot land. ☉. 5—11. — Readily known by its attenuate *panicles* o *spikes*, frequently of a purplish colour, and by the lanceolate acute *glumes*, which are glabrous, or a little rough at the keel. *Glumella* quite smooth.

4. A. *bulbósus* L. (*tuberous F.*); culm erect smooth, panicle cylindrical acuminate, glumes acute slightly hairy free, awn twice the length of the glumella. *E. B.* t. 1249: *Parn. Gr.* t. 76.

Salt-marshes in England. rare; near Yarmouth and Wey-

mouth. In Cardiff marshes, Wales. ♃. 5—7. — The *Inflorescence*, though very dense, is not a true *spike*. The *pedicels* mostly bear single flowers, but often another very small abortive one. *Glumes* entirely distinct to the base.

5. A. *geniculátus* L. (*floating F.*); culm ascending bent at the joints smooth, panicle cylindrical obtuse, glumes united at the base obtuse slightly hairy and fringed, awn twice as long as the glumella and inserted near its base. *E. B.* t. 1250: *Parn. Gr.* t. 5.

In pools, and wet and marshy places, sometimes on dry ground. ♃. 5—8.

6. A. *fúlvus* Sm. (*Orange-spiked F.*); culms ascending bent at the joints smooth, panicle cylindrical obtuse, glumes united at the base obtuse slightly hairy and fringed, awn the length of the glumella and inserted near its middle. *E. B.* t. 1467: *Parn. Gr.* t. 5. A. geniculatus *Host Gram. Austr.* v. ii. t. 32.

Ponds and ditches. Near Birmingham; Norwich; Essex; Wrexham. Angus and Fifeshire. ♃. 7. — Closely allied to *A. geniculatus*, but the *awn* is inserted higher up, and is much shorter, and the *spike* is more slender and paler. *Anthers* orange-coloured.

5. Phálaris *Linn.* Canary-grass. (Tab. VI. f. 4.)

Panicle spiked or spreading. *Spikelets* laterally compressed. *Glumes* 2, nearly equal, erect, navicular, membranaceous, longer than the floret. *Glumellas* 2, awnless, glabrous or equally hairy, at length hardened and investing the *caryopsis*. *Neuter florets* 1—2, rudimentary, sessile, and scalelike. — Named from φαλος, *shining*; *canary-seed* being very glossy.

* *Glumes winged on the keel. Panicle spiked.*

1. *P. *Canariénsis* L. (*cultivated C.*); panicle spiked ovate, glumes boat-shaped entire at the point, neuter florets 2 scalelike half the length of the perfect ones. *E. B.* t. 1310: *Parn. Gr.* t. 9.

Naturalized in many parts of England and Scotland. ☉. 7. — *Culm* 1—2 ft. high, glaucous. *Leaves* broad. *Spikes* handsome, composed of large, pale, yellow-green *glumes*, marked with deeper lines and singularly keeled at the back. *Canary-seed*, as we see it, is not only the seed of this plant, but the seed invested closely (as all *grass-seeds* are) with the pericarp, and that again with the hardened perianth or glumellas, thus occasioning its glossy appearance and pointed form.

** *Glumes not winged at the keel, panicle with spreading branches.* Digraphis.

2. P. *arundinácea* L. (*Reed C.*); panicle erect its branches

patent, florets crested secund, neuter florets consisting of 1— small hairy valves. *E. B.* t. 402, and t. 2160. f. 2. (unde *Calamag. stricta*): *Parn. Gr.* t. 9.—β. *variegata*, leaves varie gated with white lines. *Parn. Gr.* t. 82. Arundo colora *Sm. Fl. Br.*

Sides of lakes and rivers, common. ♃. 7, 8.—The *var.* β. frequent in gardens, and called *riband-grass*. Very different fro the last in general habit, but not in essential character. *Panic* large, 6—8 inches long, often brownish or purplish-green. Usef for securing river banks; its roots are creeping, and here and the tufted.

6. Ammóphila *Host*. Sea-reed. (Tab. VI. f. 5.)

Panicle spiked. *Spikelets* laterally compressed. *Glumes* nearl equal, keeled, membranaceous, diverging, longer than the flore *Glumellas* 2, subcoriaceous below, each with a tuft of sho silky hairs at the base; outer one mucronulate or with a ver short awn below the point. *Neuter floret* 1, rudimentary an very minute, coriaceous, sessile, often obsolete.—Named fro *αμμος*, *sand*, and *φιλος*, a *lover*.

1. A. *arundinácea* Host (*common S.*, *Marum*, or *Matweed*) panicle cylindrical acuminate, glumes acute, hairs one-thir the length of the floret. Arundo arenaria *E. B.* t. 520: *Par Gr.* t. 8. Psamma *Beauv.*

Sandy sea-shores, frequent. ♃. 7.—*Root* much creeping. *Leav* long, narrow, rigid, involute, glaucous. *Culm* 2—3 ft. high. *Gl mellas* far more rigid than the *glumes*; the larger one with a sma sinus below the point.—Extensively grown in Norfolk and Holla for preserving the banks of sand which protect these countries fro the inroads of the sea; and in Sussex for making beautiful table-ma and basket work.

7. Phléum *Linn.* Cat's-tail-grass. (Tab. VI. f. 6.)

Panicle spiked. *Spikelets* laterally compressed. *Glume* nearly equal, parallel, acuminate or mucronate-aristate, longe than the floret. *Glumellas* 2, membranous, glabrous, awnless *Caryopsis* free.—Named from *φλεος*, or *φλεως*, formerly applied it is supposed, to the *Reed-mace* (*Typha*), to which our gras bears some distant resemblance.

1. P. *praténse* L. (*common C.* or *Timothy-grass*); panicl cylindrical, glumes truncate mucronate-aristate ciliated at th back at least twice as long as the awn, neuter floret wanting *E. B.* t. 1076: *Parn. Gr.* tt. 6, 77, 78.

Meadows and pastures, very common. ♃. 6—10.—*Root* some times tuberous, and then the plant is the *P. nodosum* Willd. *Glume* as in all the species, extremely compressed, keeled with a dorsal gree

nerve running out into a spreading awn, scarcely half so long as the glume.

2. P. *alpínum* L. (*alpine C.*); panicle oblong or ovate-oblong, glumes truncate mucronate-aristate ciliated at the back scarcely longer than the awn, neuter floret wanting.—*α.* *awn ciliated, upper sheath scarcely inflated and about twice the length of the leaf, uppermost ligule oblong acute.—*β.* awn scabrous, upper sheath inflated 3—4 times the length of the leaf, uppermost ligule very short obtuse. *E. B.* t. 519: *Parn. Gr.* t. 6. P. commutatum *Gaud.*

β. Banks of mountain-streams, rare. Braedalbane mountains; Feula burn, Canlochen Glen, Glashieburn, White Water above Glen Dole, Glen Fiadh, and rocks near Loch Brandy, Clova; Garway moor, Invernesshire. 4. 7.—*Spike* purplish, variable in length, sometimes only half an inch, sometimes 1½ inch long. The awns in our Scotch plant "are generally scabrous; but in some instances the scabrous processes towards the base are so elongated as to become ciliæ." *Gardn.* The genuine form of *α* has not yet occurred in this country.

3. P. *ásperum* Jacq. (*rough C.*); panicle cylindrical, glumes wedge-shaped tumid upwards mucronate rough, neuter floret subulate, stem often branched. *Parn. Gr.* t. 79. P. paniculatum *Huds.*: *E. B.* t. 1077.

Rare in dry open fields, in the western and midland parts of England. ⊙. 7.—*Culms* very leafy; the long *spikes* are partly concealed among them.

4. P. *Boehméri* Schrad. (*purple-stalked C.*); panicle cylindrical, glumes linear-lanceolate suddenly acuminate-aristate hispidly ciliate on the keel above the middle, neuter floret subulate. *Parn. Gr.* t. 80. Phalaris phleoides *L.*: *E. B.* t. 459.

Dry sandy and chalky fields, rare; principally in Norfolk and Cambridgeshire. 4. 7.—*Culms* simple, erect, sparingly leafy, slender, shining purple.

5. P. **Michélii* All. (*Michelian C.*); panicle nearly cylindrical, glumes lanceolate acuminate strongly ciliated at the back the whole length. *E. B.* t. 2265.: *Parn. Gr.* t. 7.

Rocky parts of the high mountains of Clova, Scotland: *G. Don.* 4. 7, 8.—Distinguishable at once from the preceding species by its gradually tapering *glumes*. No one has succeeded in verifying Don's discovery; the specimens given by him were cultivated ones.

6. P. *arenárium* L. (*Sea C.*); panicle obovate-cylindrical, glumes lanceolate acute ciliated at the back above the middle. *Parn. Gr.* t. 7. Phalaris *E. B.* t. 222.

On loose sand, especially near the sea. ⊙. 5, 6.—*Culms* 5—6

inches high, many from the same root. *Glumellas* half as long as th *glumes*, membranaceous, truncate.

8. Lagúrus *Linn.* Hare's tail-grass. (Tab. VI. f. 7.)

Panicle spiked. *Spikelets* laterally compressed. *Glume* lengthened into a long subulate point, fringed to the end longer than the floret. *Glumellas* 2, membranaceous; outer one bifid, ending in 2 long bristles, with a dorsal twisted jointed awn.—Named from λαγως, a *hare*, and ουρα, a *tail*.

1. L. *ovátus* L. (*ovate H.*); *E. B.* t. 1334: *Parn. Gr.* t. 88.

Very rare. Sandy grounds in the north and west of Guernsey. ⊙ 6.— The only species of the genus, remarkable for its soft and pale heads of *flowers*, from among which the long *awns* are protruded.

9. Mílium *Linn.* Millet-grass. (Tab. VI. f. 8.)

Panicle spreading. *Spikelets* somewhat dorsally compressed, awnless. *Glumes* 2, nearly equal, flattish, herbaceous, rather acute, scarcely longer than the floret. *Glumellas* 2, nearly equal, glabrous, at length hardened and enclosing the *caryopsis*. *Neuter florets* 0.—Named either from *mille*, a *thousand*, on account of its fertility; or, according to Théis, from the Celtic *mil*, a *stone*, from the hardness of its fruit.

1. M. *effúsum* L. (*spreading M.*); panicle glabrous its branches subverticillate, leaves lanceolate, ligule obtuse. *E. B.* t. 1106: *Parn. Gr.* t. 17.

Moist shady woods. ♃. 5—6.— *Culms* 3—4 ft. high.—We have above, for the sake of simplicity, given this genus a character very different from what it ought really to have, and which would remove it to near *Panicum*: it has only one *glume*, the lower being entirely absent, while what we have called the second glume is a *neuter floret* composed of one *glumella* as large as, and precisely similar to, the glume.

10. Gastrídium *Beauv.* Nit-grass. (Tab. VI. f. 9.)

Panicle contracted, spiked. *Spikelets* scarcely compressed. *Glumes* 2, acute, awnless, ventricose and rounded at the base, keeled upwards, membranaceous, much longer than the floret. *Glumellas* 2, membranaceous; outer one truncate or toothed at the end with (or without) a long straight awn below the point. *Neuter florets* 0.—Named from γαστριδιον, a ventricle, or little *swelling*, as is seen at the base of the spikelet.

1. G. *lendígerum* Beauv. (*awned N.*); glumes lanceolate acuminate shorter than the awn of the glumella. *Parn. Gr.* t. 86. Milium *E. B.* t. 1107.

Places where water has stagnated near the sea, rare. Gillingham

and Cley, Norfolk; Little Baddow and Great Leighs, Essex; Sheppy Isle and Erith, Kent; Sussex; Isle of Wight (abundant); Weymouth, Dorsetsh.; Devonsh.; Somerset; Gloucester. N. Wales. 4. 6—10. — *Culms* 4—6 or 8 inches high, with numerous glossy *florets*, singularly swollen at the base.

11. Stípa *Linn.* Feather-grass. (Tab. VI. f. 11.)

Panicle erect, contracted (but not spiked). *Glumes* 2, longer than the floret, membranaceous. *Floret* stipitate. *Glumellas* cartilaginous; outer one involute, terminated with a very long twisted awn; *awn* jointed at the base, and finally separating at the joint. *Neuter florets* 0. — Named from στυπη, *tow*, *flax*, from the flaxen or silky appearance of the common species of the gardens.

1. S. **pennáta* L. (*common F.*); leaves rigid setaceous grooved, awns exceedingly long feathery to the point. *E. B.* t. 1356: *Parn. Gr.* t. 87.

Said to have been found in Dillenius's time in Westmoreland. 4. 6. — A great ornament to our gardens in the summer, and to our rooms in the winter, for if gathered before the seed is ripe, the long feathery awns remain, and a tuft of this grass is almost as beautiful as the famed tail of the Bird of Paradise.

12. Polypógon *Desf.* Beard-grass. (Tab. VI. f. 10.)

Panicle compact, somewhat spiked. *Spikelets* laterally compressed. *Glumes* 2, equal, longer than the floret, each notched and with a long straight awn at the extremity. *Glumellas* unequal; the outer obtuse, usually awned almost at the very extremity. *Neuter florets* 0. — Named from πολυ, *many*, and πωγων, a *beard*; from the bearded appearance of the panicle.

1. P. *Monspeliénsis* Desf. (*annual B.*); awns 2—3 times as long as the rather obtuse rough glumes, root annual. *Parn. Gr.* t. 11. Agrostis panicea *E. B.* t. 1704.

Rare, in moist pastures near the sea. Hampshire; Purfleet, Essex; Northfleet Hope, Thames; Cley, Norfolk; Gloucester; Durham (on ballast hills). Guernsey. Inverkeithing, Fifeshire. ☉. 6—8. — A beautiful grass; rare, but undoubtedly wild in our country; most abundant in the warmer parts of Europe. In Hampshire it is sometimes found 4 feet high.

2. P. *littorális* Sm. (*perennial B.*); awns equal in length to the almost glabrous acute glumes, root perennial. *Parn. Gr.* t. 81. Agrostis *E. B.* t. 1251.

Muddy salt-marshes, very rare. Near Cley, Norfolk; coast of Essex; near the powder magazine, Woolwich; Saltmarsh pool, near Porchester, Hants (where the culms are 6 feet long and decumbent below.) 4. 7. — Very different from the last species; yet rightly

referred by Sir J. E. Smith, to *Polypogon*. The *glumes* are mo acuminate than in *P. Monsp.*, and taper more gradually into th much shorter awn; outer *glumella* truncate; both toothed at th points. — Long supposed peculiar to England, but found in Ge many, France, and Spain, although described under different names.

13. CALAMAGRÓSTIS *Adans.* Small-reed. (Tab. VIII. f. 12.

Panicle loose or close. *Spikelets* laterally compressed. *Glume* 2, nearly equal, longer than the floret, which is surrounded b scaly hairs at the base. *Glumellas* 2, membranaceous; oute one (sometimes shortly) awned at the point or back, very rarel awnless. *Neuter floret* wanting, or reduced to a short scale o pedicel. — Named from καλαμος, one of the *Palms*, and αγροστις a genus of grasses; a barbarous denomination, only admissibl on the ground of its being now generally adopted.

1. C. *Epigéjos* Roth (*Wood S.*); panicle erect close, spike lets crowded unilateral, glumes subulate their keel rough, oute glumella with a dorsal awn from about its middle nearly as long as the glumes, hairs longer than the glumellas, neute florets none. *Parn. Gr.* t. 16. Arundo *L.: E. B.* t. 403.

In shady moist places, not very common. Dalrymple Wood, Ayr also in Argyle, and Aberdeenshire, Scotland. ♃. 7. — Some au thors still retain the name *Arundo* for this genus, but the Roma name *Arundo* was applied partly to *Phragmites*, partly to the *Donax* of the Greeks, not to any species of *Calamagrostis*.

2. C. *lanceoláta* Roth (*purple-flowered S.*); panicle erect loose, spikelets scattered spreading, glumes lanceolate their keel smooth, outer glumella with a very short terminal awn between the bifid point and scarcely longer than it, hairs longer than the glumellas, neuter florets none. *Parn. Gr.* t. 84. Arundo Calamagrostis *L.: E. B.* t. 2159.

Moist hedges, in fenny countries, not uncommon. ♃. 6. — *Panicl* much smaller and looser than the last; *spikelets* more purple and shining.

3. C. *stricta* Nutt. (*narrow S.*); panicle erect close, glumes lanceolate acute a little rough on the keel with 3 or more nerves, outer glumella bifid nearly as long as the upper glume longer than the hairs, with an awn equal to it in height inserted below the middle, neuter floret rudimentary, leaves of the barren shoots slender. *Parn. Gr.* t. 16. C. Lapponica *Hook. Parn. Gr.* t. 85. Deyeuxia *Kunth.* Arundo stricta *Schrad. E. B.* t. 2160.

Bogs and marshes, very rare. Oakmere in Delaware Forest, Cheshire. White Muir Marsh and Rescobie Loch, near Forfar, now extirpated by drainage. Lough Neagh, and other places in the county of Antrim. ♃. 6, 7. — *Culms* $1\frac{1}{2}$—3 ft. high. *Leaves* o

the culm broad, of the barren shoots narrower, rigid, and convolute when dry. *Panicle* 1—4 inches long, at first spreading, afterwards compact. *Hairs* not half the length of the *glumellas*. In the Irish plant, called *C. Lapponica* in a former edition of this work, the spikelets are larger, the branches of the panicle shorter, and the uppermost ligule longer and more acute; but in the true *C. Lapponica*, the glumes are described as 1-nerved, the awn is bent, and the hairs are scarcely shorter than the glumellas.

[*C. pyramidalis* of Host is said to have been collected near Hebden bridge, Yorkshire, by the late Mr. *S. Gibson*, but we have seen no specimens.]

14. Agróstis *Linn.* Bent-grass. (Tab. VI. f. 13.)

Panicle loose. *Spikelets* laterally compressed. *Glumes* 2, acute, membranaceous, longer than the floret, awnless. *Floret* sessile, glabrous or with 1—2 tufts of very short hairs at the base. *Glumellas* 2, unequal; the inner sometimes wanting, the outer with or without an awn. *Caryopsis* free, oblong, or linear. — Name: given by the Greeks to grasses, from αγρος, a *field*, because they are so abundant in open places.

* *Upper glume the smaller. Neuter floret* 0.

1. A. *canína* L. (*brown B.*); branches of the panicle long slender erect-patent, glumes unequal lanceolate rough at the keel, outer one 1-nerved, glumella 1 erose at the end 5-nerved with a dorsal awn from below the middle, leaves linear, sheaths smooth, ligule oblong acute. *E. B.* t. 1856: *Parn. Gr.* t. 15.

Moist heaths and moory places, abundant. ♃. 6, 7. — Very variable in the size and colour of its flowers, purple or green, and in the length of the dorsal *awn*, which is sometimes included within the *glumes*, at other times considerably exserted. We have never seen more than one glumella, not even the rudiment of a second; and it is from this circumstance that Schrader has constituted of it the genus *Trichodium*. But other species of *Agrostis* have very reduced *glumellas*; and *A. setacea*, placed in *Trichodium* by Dr. Lindley, has assuredly always an inner one. Smith and Leers have detected an inner one, even in *A. canina*; hence, as the former observes, its presence or absence does not afford even a specific character.

2. A. *setácea* Curt. (*Bristle-leaved B.*); branches of the panicle short close spreading in flower, glumes unequal lanceolate rough at the keel, outer glumella erose at the end 4-nerved with a long geniculate twisted awn from its base, inner very minute, leaves setaceous, sheaths rough, ligule oblong acute. *E. B.* t. 2138: *Parn. Gr.* t. 83.

Very local, almost wholly confined to the dry downs of the extreme south and south-west parts of England, as Hampshire, Devonshire, and Cornwall. ♃. 6, 7. — Larger *glumella* white, thin, and membranous, truncate at the top, with 4 green nerves, of which two, the

lateral ones, project into mucros; *awn* from the very base, rough, tru geniculate and twisted; inner one very small, truncate and toothe accompanied on each side at the base by a pencil of white hairs.

3. A. *vulgáris* With. (*fine B.*); branches of the panic smoothish its branchlets spreading after flowering, glumes nearl equal, outer one rough on the keel above, outer glumell 3-nerved, ligule extremely short and truncate.—*a. mutica;* spike lets awnless. *E. B.* t. 1671. *Parn. Gr.* t. 12.—*β. aristata* spikelets awned. *Parn. Gr.* t. 13. A. canina *With.*—*γ. pu mila;* scarcely 3 inches high, spikelets often awned. *Parn. Gr* t. 12. A. pumila *Lightf. Scot.* p. 1081 (*fig. in title-page*).

Meadows, pastures, and banks, common everywhere. ♃. 6, 7.— *Root* creeping, throwing out many, mostly ascending *culms*, 1 o 1½ foot high. *Sheaths* usually smooth. *Panicle* purplish; *rachi* smooth, and the branchlets nearly so. *Glumes* lanceolate, smooth shining, rough on the back. *Glumellas* 2, thin, delicate, membranaceous unequal; *outer one* a little shorter than the *glumes*, 3-nerved, tridentate awnless in *α*; bearing an awn of uncertain length in *β*., but mostly short, arising from the central nerve a little below the middle of the back; *inner glumella* half as small, 2-nerved, bifid. Specimens of this species sometimes, though very seldom, occur, bearing the rudiment of a second floret upon a rather long foot-stalk, in the same calyx

4. A. *álba* L. (*Marsh B.*); branches of the panicle hispid its branchlets erect after flowering, glumes nearly equal, outer one rough on the keel all over, outer glumella 5-nerved, ligule elongated acute.—*a.* culms erect. *E. B.* t. 1189: *Parn. Gr.* tt. 13, 14.—*β. stolonifera;* culms with long prostrate scions. *Parn. Gr.* t. 14. A. stolonifera *L.*: *E. B.* t. 1532.—*γ. maritima;* culms procumbent rooting at the joints, panicle small lobed.

Pastures, road-sides, and in various other situations, abundant. ♃. 7, 8.—*Plant* stouter than the last, and generally taller. *Culms* ascending, often rooting at the base, and throwing out runners. *Panicle* rather contracted, pale green or purplish, branchlets patent during flowering, more erect afterwards, and giving the panicle a compact appearance. *Glumes* like those in *A. vulgaris*, as are the *glumellas*; but the outer one has 5 nerves and as many teeth, and the inner one is only faintly 2- or 3-nerved at the base, nearly entire and obtuse at the extremity. In some there is a short awn at the base of the outer *glumella:* this constitutes the *A. compressa* Willd.; and occasionally the flowers are viviparous, when it is the *A. sylvatica* Linn. We know of no British awnless *Agrostis* which may not be reduced either to *A. vulgaris* or *A. alba*. The two species are indeed very closely allied.

** *Upper glume the larger, 3-nerved, as long as the lower glumella; lower 1-nerved. Outer glumella with a long awn from near its summit. Neuter floret filiform.* Apera.

5. A. *Spica vénti* L. (*spreading silky B.*); panicle spreading,

glumes unequal lanceolate rough at the keel, outer glumella bifid with a subterminal long straight awn, inner one smaller with a small stalk-like neuter floret at its base, anthers linear-oblong. *E. B.* t. 951. Apera *Beauv.* Anemagrostis *Trin.*: *Parn. Gr.* t. 17.

Rare, in sandy fields which are occasionally flooded, principally about London: in Norfolk and Lancashire. ⊙. 6, 7. — A beautiful grass, with very slender branches to its ample panicle, which is wavy and glossy like silk, well named by old Parkinson "*Gramen agrorum venti spica.*" *Awn* many times longer than the *spikelet*, rough. Inner *glumella* not much less than the outer; at its base is a little neuter floret, resembling a pedicel destitute of flower, which has a small tuft of hair on each side.

6. A. *interrúpta* L. (*dense-flowered silky B.*); panicle long contracted narrow, branches half-whorled the lower ones remote, glumes unequal lanceolate rough at the keel, outer glumella bifid with a subterminal long straight awn, inner one smaller with a small stalk-like neuter floret at its base, anthers roundish oval. Apera *Beauv: E. B. S.* t. 2951. Anemagrostis *Trin.*

Sandy pastures, rare. About Thetford. ⊙. 6, 7. — So very closely allied to the last that Trinius at one time proposed to unite them: they only differ by the spreading or contracted panicle, and the linear-oblong or oval anthers, and agree in all the other characters.

** *Spikelets* 2—3-*flowered: perfect florets* 2, *very rarely* 3; *sometimes solitary, with* 1—2 *imperfect barren florets or a neuter one which is as large as the perfect one or sometimes* (*in* Catabrosa, Molinia, *and* Melica) *rudimentary.* (Tab. VI. f. 14. VII. f. 15—22.) (Gen. 15—25.)

15. Catabrósa *Beauv.* Whorl-grass. (Tab. VI. f. 14.)

Panicle spreading. *Spikelets* scarcely compressed, ovate, awnless, with 1—3 perfect *florets* and often 1—2 neuter ones. *Glumes* 2, membranaceous, 1-nerved, much shorter than the spikelets, rounded on the back, very obtuse, lower one the smaller, upper crenate or toothed at the end. *Glumellas* 2, coriaceous, membranaceous only at the extremity, 3-ribbed, truncate and erose at the end, nearly equal. *Caryopsis* free.—Named from καταβρωσις, *a gnawing;* from the erose extremity of the glumes.

1. C. *aquática* Beauv. (*Water Whorl-grass*); panicle with whorled patent branches, leaves broadly linear obtuse. — *α.* larger, spikelets 2—3-flowered. *Parn. Gr.* t. 20. Aira *L.*: *E. B.* t. 1557. — *β.* small, spikelets 1-flowered. *Parn. Gr.* t. 102.

Banks of rivers, and floating in pools of water.—*β.* on the seashore in the west of England and Scotland. 4. 5, 6. — This is

very different in habit and generic character from *Aira*, and from any other grass with which we are acquainted. Mertens unites it to the long-spikeleted *Poas*, which now, according to Smith, form the genus *Glyceria*; but it does not naturally combine with them. *Root* or *caudex* very long, branched, floating, jointed, sending from the joints fibrous *radicles* below, and *culms* above, a foot or more long, stout with short broad *leaves*. *Glumes* with only a single nerve or midrib thin and membranous, broadly oval, obtuse. *Glumellas* of a thick texture, brownish-green, white and diaphanous at the blunted extremity.

16. Aíra *Linn.* Hair-grass. (Tab. VII. f. 15.)

Panicle lax (rarely contracted). *Spikelets* laterally *compressed* with 2 (or rarely 3 or only 1) perfect *florets* and sometimes a neuter one which is usually rudimentary. *Glumes* 2, unequal, about as long as the *florets*, the outer 1-nerved. *Glumellas* membranaceous and thin, hairy at the base; the outer one awned at the back, with or without faint lateral nerves, toothed or entire or bifid but not setigerous at the end. *Caryopsis* glabrous. — Named from αιρω, to *destroy*. This name was anciently applied to the *Lolium temulentum* (*bearded Darnel*), on account of its injurious effects, and now to the present genus of grasses, which has little in common with it.

* *Outer glumella erose or toothed at the end. Caryopsis free, neuter floret subulate.*

1. A. *cæspitósa* L. (*tufted H.*); panicle diffuse, branches scabrous, glumes slightly rough on the midrib, upper 3-ribbed, florets hairy at the base rather longer than the glumes, awn straight inserted near the base of and seldom exceeding in length the outer glumella.—*α. vulgaris:* sheaths of leaves rough, awn the length of the floret. *E. B.* t. 1453: *Parn. Gr.* tt. 23, 104.—*β. brevifolia;* radical leaves short, sheaths smooth, panicle small, awn the length of the floret. *Parn. Gr.* t. 136.—*γ. longiaristata;* sheaths smooth, awn projecting one third beyond the floret. *Parn. Gr.* t. 105.

Moist shady places, and borders of fields, plentiful.—*β.* and *γ.* on the mountains. ♃. 6, 7.—Much tufted. *Culms* 2—4 feet high. *Leaves* linear, acuminate, rough at the margin. *Ligule* long, acute, entire. *Panicle* large, silvery-grey or greenish, much branched, smaller and purplish in *β.* *Spikelets* acute. *Glumes* unequal, lanceolate, subglabrous, rather acute, erose. *Florets* with a few longish hairs at the base, upper ones pedicellate; their *glumellas* ovate, obtuse, erose, the outer one with 4 short teeth, the inner bifid. Mr. Wilson finds it viviparous on Snowdon, with the awn inserted above the middle of the valve. *Var. β.* is frequently collected for the next species, from which it can only be certainly known by the position of the awn; *var. γ.* has sometimes but one fertile floret, when it is *A. conglomerata* Don.

2. A. *alpina* L. (*smooth Alpine H.*); panicle subcoarctate, branches and pedicels perfectly or nearly smooth, glumes smooth on the midrib, upper 3-ribbed, florets as long as the glumes, awn inserted above the middle and scarcely exceeding the glumes in length. *Parn. Gr.* tt. 23, 109. A. lævigata *E. B.* t. 2102.

Moist rocks on the higher Scottish mountains and in Wales, usually viviparous. ♃. 6, 7. — About 1 foot high, very smooth. *Leaves* only scabrous to the touch on the upper side, short. *Panicle* rather small; branches erect; the lower ones, when viviparous (which they mostly are), patent and even drooping. *Spikelets* not numerous, larger than in *A. cæspitosa* α., and more resembling, as does the whole plant, the *var.* β. and *A. flexuosa*. *Glumes* equal, quite smooth. *Florets* with a short tuft of hairs at the base. *Glumellas* lanceolate, not compressed, lower one slightly jagged at the end. The *awn* is flat at the base and usually twisted in the flowering specimens; but in the viviparous ones, the awn is straight and subterminal, often a mere point, and the florets are almost quite glabrous at the base. In *A. atropurpurea* Wahl., the panicle is fewer-flowered, and the florets are considerably shorter than the calyx.

3. A. *flexuósa* L. (*waved H.*); panicle (when flowering) diffuse, glumes roughish on the midrib, upper with central and 2 obscure lateral ribs, florets villous at the base as long as the glumes, awn jointed inserted near the base of but much longer than the glumella, leaves setaceous. — α. lower floret scarcely longer than the glume. *E. B.* t. 1519: *Parn. Gr.* tt. 23, 107. — β. *montana*; more slender, lower floret longer than the glume. *Parn. Gr.* t. 108.

Heaths and hilly places; abundant. — β. Highland moors, among heather. ♃. 7. — Habit of the last, but taller. *Florets* larger and the awns protruded considerably beyond the calyx. *Glumellas* as in the last two species. *Ligule* of the uppermost leaf bifid.

** *Outer glumella entire at the end; awn jointed in the middle with a tuft of hairs at the joint, upper portion clavate. Neuter floret wanting. Glumes both* 1*-nerved.*

4. A. *canéscens* L. (*grey H.*); panicle rather dense, florets shorter than the calyx, awn clavate shorter than the calyx, leaves setaceous. *E. B.* t. 1190: *Parn. Gr.* t. 110. Corynephorus *Beauv.*

On the sandy sea-coasts of Dorset, Norfolk, and Suffolk. Jersey. ☌. 7. — Remarkable in this genus for having its awn clavate, and bearing, at the joint, a tuft of hairs; a character which distinguishes it from all other British grasses.

*** *Outer glumella bifid, at length somewhat cartilaginous and enclosing the caryopsis. Awn geniculate, twisted. Rudimentary neuter floret none. Glumes both* 1*-nerved.*

5. A. *caryophýllea* L. (*silvery H.*); panicle divaricated, spike-

lets obtuse at the base, florets scarcely villous at the base shorter than the glumes, awn inserted below the middle jointed longer than the glumes, leaves setaceous. *E. B.* t. 812 : *Parn. Gr.* t. 24.

Gravelly hills and pastures, frequent. ♃. 6, 7. — *Culms* 2—6 or 8 inches high. *Leaves* short, few. *Panicle* trichotomous. *Florets* silvery-grey. *Glumes* nearly equal, ovate, gibbous at the base, 1-nerved, the upper part pellucid and white. *Glumellas* scabrous at the back, at length brown, firm, and inclosing the *caryopsis*, apex bifid.

6. A. *præ'cox* L. (*early H.*) ; panicle contracted oblong, spikelets somewhat acute at the base, florets scarcely villous at the base about as long as the glumes, awn twisted inserted below the middle and usually near the base longer than the glumes, leaves setaceous. *E. B.* t. 1296 : *Parn. Gr.* t. 25.

Sandy hills and pastures. ⊙. 5, 6. — *Culms* 1—3 inches high. *Panicle* few-flowered, pale silvery-green. *Glumes* ovate-lanceolate, scabrous ; when seen under a good glass both are 1-nerved ; *glumellas* narrow, acuminate, scabrous, the point bifid. — These two last species have the habit of *Aira*, but are scarcely distinct from the 2-flowered species of *Avena*, on account of the glumellas hardening and inclosing the caryopsis, except by the glumes having only a central nerve.

17. Molínia *Mœnch.* Molinia.

Panicle somewhat contracted or spreading. *Spikelets* awnless, oblong-cylindrical, with 1—5 (or more) *perfect florets* and usually a subulate rudimentary upper *neuter* one. *Glumes* 2, acute, shorter than the florets, unequal, 1-nerved. *Glumellas* 2 ; outer one rounded on the back, glabrous, entire at the end, at length cartilaginous and covering the free *caryopsis*.—Named in honour of *Don Giovanni Ignatio Molina*, who wrote an account of the Natural History of Chili, published in 1782.

1. M. *cærúlea* Mœnch (*purple M.*) ; panicle erect somewhat contracted, spikelets erect, outer glumella usually 3-nerved, culm with one knot near the base. — *α.* panicle bluish-purple, spikelets 2— 3 flowered, outer glumella 3-nerved. *Parn. Gr.* tt. 20, 230. Melica L. : *E. B.* t. 750. — *β.* panicle pale green, spikelets 1-flowered, outer glumella 3—5-nerved. M. depauperata *Lindl.* : *Parn. Gr.* t. 19. Melica alpina *Don.*

Wet heathy places and moors, frequent. — *β.* Clova mountains at an elevation of 3,000 feet. ♃. 7, 8. — *Culms* 1—2 feet high or more. All the *leaves*, which are long, linear, and acuminate, spring from the base, or from a single joint immediately above it. *Panicle* 2—8 inches in length, bluish-purple, rarely green. *Glumes* lanceolate, nearly equal. *Florets* generally 2 perfect and 1 sterile ; but, if *M. altissima* of Link be only a variety, as supposed by Kunth, the spikelets are sometimes many-flowered. *Anthers* large, purple. — Brooms are made of the culms in England, according to Withering :

and, in Skye, Lightfoot says that the fishermen twist them into excellent ropes for their nets.

18. Mélica *Linn.* Melic-grass. (Tab. VII. f. 16.)

Panicle lax. *Spikelets* ovate, awnless, with 1—2 perfect *florets* and a club-shaped rudimentary neuter one. *Glumes* 2, nearly equal, shorter than the florets, several-nerved. *Glumellas* 2; outer one rounded on the back, entire at the end, at length cartilaginous and enclosing the free *caryopsis*. — Name: *Melica* or *Melliga*, given in Italy to the *Sorghum vulgare*, on account of the sweet flavour of its stem (*mel*, honey), is applied by Linnæus to this somewhat allied genus.

1. M. *nútans* L. (*Mountain M.*); panicle nearly simple racemed secund, spikelets drooping ovate 2-flowered. *E. B.* t. 1059: *Parn. Gr.* t. 18.

Woods in somewhat mountainous countries; especially in the north of England and Scotland. ♃. 5, 6. — One foot or more high, leafy. *Leaves* linear-lanceolate, flat: *ligule* short and obtuse. *Glumes* ovate, convex, nerved, deep purple-brown, margin pale. Outer *glumellas* large, cartilaginous, unequal, nerved. Between the two perfect florets is the rudiment of a third, which is pedicellate, consisting of 2 hardened glumellas without either pistil or stamen.

2. M. *uniflóra* L. (*Wood M.*); panicle branched slightly drooping, spikelets erect ovate with only one glabrous perfect floret. *E. B.* t. 1058; *Parn. Gr.* t. 18.

Shady woods, frequent. ♃. 5—7. — Imperfect floret on rather a long foot-stalk. *Leaves* broader than the last, and whole plant larger. *Scale* of one piece, orange-coloured, thick, "covered by the outer *glumella*:" *Wilson.*

19. Hólcus *Linn.* Soft-grass. (Tab. VII. f. 17.)

Panicle lax. *Spikelets* laterally compressed, 2-flowered. *Glumes* 2. *Lower floret* perfect, triandrous: *glumellas* 2; outer one awnless or very rarely awned. *Upper floret* barren, triandrous; *glumellas* 2; outer one awned. *Caryopsis* covered by the indurated *glumellas*. — Named ὁλκος, from ἑλκω, to *extract*; because it was supposed to have the property of drawing out thorns from the flesh!

1. H. *móllis* L. (*creeping S.*); glumes acuminate, awn of barren floret exserted at length geniculate scabrous all over, joints of the culm with a tuft of hairs, root creeping. *E. B.* t. 1170: *Parn. Gr.* t. 21.

Pastures and hedges, common. ♃. 7. — Mr. Wilson well observes that this species is distinguished by the acute (or almost acuminate) glumes and downy joints of the culm.

2. H. *lanátus* L. (*Meadow S.*); glumes rather obtuse mucro-

nate, awn of barren floret included within the glumes at length curved glabrous except near the end, no tuft of hairs at the joints, root fibrous. *E. B.* t. 1169 : *Parn. Gr.* t. 21.

Meadows, pastures, and woods, common. ♃. 6, 7. — Much resembling the last in general appearance, but clothed with a softer and more abundant pubescence.

20. ARRHENATHERUM *Beauv.* Oat-like Grass.

(Tab. VII. f. 18.)

Panicle lax. *Spikelets* laterally compressed, 2-flowered, with an upper rudimentary neuter one. *Glumes* 2, nearly equal, membranaceous, as long as the florets. *Lower floret* barren, triandrous ; *glumellas* 2 ; outer one with a long twisted geniculate awn above the base. *Upper floret* perfect, triandrous : *glumellas* 2 ; outer one with a short straight bristle below the point. — Named from *αρρην*, *male*, and *αθηρ*, an *awn*. This genus has altogether the habit of *Avena*, from which it differs in the number and structure of its florets.

1. A. *avenáceum* Beauv. (*common Oat-like G.*) ; leaves flat. Holcus avenaceus *Scop.* : *E. B.* t. 813. Avena elatior *L.* — *α.* root fibrous, nodes of the culm usually glabrous. *Parn. Gr.* t. 25. — *β.* root knotted, nodes of the culm downy. *Parn. Gr.* t. 26.

Hedges and pastures, frequent. ♃. 6, 7. — The *Avena precatoria* of Thuill., *Avena nodosa* of Cullum, *Arrh. bulbosum* Dunal and Lindl., are but varieties, with a knotted or tuberous base to the culm. *Culm* 2—3 feet high. *Panicle* long, loose. *Spikelets* greenish-brown. The only other species of this genus is *A. pallens*, a Portuguese and very little known plant, with convolute leaves.

21. HIERÓCHLOE *Gmel.* Holy-grass. (Tab. VII. f. 19.)

Panicle mostly lax. *Spikelets* laterally compressed, 3-flowered, without neuter florets. *Glumes* 2, nearly equal, membranaceous, about as long as the spikelet. *Central floret* perfect, diandrous ; *glumellas* 2, permanently membranaceous. *Lateral florets* barren, triandrous. *Caryopsis* free. — Named from *ιερος*, *sacred*, and *χλοα*, or *χλοη*, a *grass* : so called by Gmelin, because, in some parts of the Prussian dominions, it is dedicated to the Virgin Mary, and strewed before the doors of the churches on festival-days, as the *Sweet-sedge* (Acorus Calamus) still is at Norwich.

1. H. *boreális* R. et S. (*Northern H.*) ; panicle subsecund, peduncles glabrous, florets awnless, outer glumellas ciliated at the margin. *Hook. in E. B. S.* t. 2641 : *Parn. Gr.* t. 31. Holcus odoratus *Linn.* : *Sm.* Holc. borealis *Schrad.*

In a narrow mountain valley, called *Kella*, in Angusshire; *G. Don.* Near Thurso, Caithness; *Mr. Robert Dick* (1854). ♃. 5. — About ½ foot high, glabrous. *Leaves* linear-acuminate. *Panicle* brownish, glossy. *Spikelets* broadly ovate. *Glumes* ovate, acute, rather unequal, sometimes a little serrate at the point. *Florets* rather longer than the *glumes*: the outer *glumellas* are of a firmer texture, scabrous when highly magnified, distinctly fringed at the margin, the point sharp, but not awned. *Central floret* the smallest. Smell resembling that of *Anthoxanthum odoratum*. Don's station has not been verified; but the plant is, we believe, abundant in Caithness. In Iceland it is so plentiful as to be used by the people to scent their apartments and clothes.

22. Koelèria *Pers.* Koeleria.

Panicle spiked, rounded. *Spikelets* laterally compressed, distichous, with 2 or more perfect florets. *Glumes* 2, unequal, membranaceous, keeled, shorter than the florets. *Glumellas* 2, membranaceous, naked at the base; outer one keeled, entire, pointed or with a straight subterminal bristle. *Caryopsis* free. —Named in honour of *George Louis Koeler*, author of a work on German and French Grasses, published in 1802.

1. K. *cristáta* Pers. (*crested* K.); panicle interrupted below, outer glumella acute 3-ribbed, leaves narrow ciliated on the margins or hairy. Aira *L.*: *E. B.* t. 648. Airochloa *Link*: *Parn. Gr.* t. 19.

Dry pastures; most frequent in the North, and especially near the sea. ♃. 6, 7. — *Culm* 6—8 inches high, sometimes more. *Leaves* linear, short in dry places, but sometimes elongated to the length of the culm in damp situations. *Leaves* and *spikelets* very variable as to pubescence, being sometimes glabrous, sometimes villous. *Glumes* acute or slightly acuminate, lanceolate, compressed. Inner *glumellas* white, delicate, reticulated, bifid, with two longitudinal folds.

23. Sesléria *Linn.* Moor-grass. (Tab. VII. f. 20.)

Panicle spiked, rounded or slightly unilateral. *Spikelets* laterally compressed, with 2 or more perfect florets. *Glumes* 2, somewhat unequal, 1-nerved, about as long or longer than the florets. *Glumellas* 2, naked at the base, membranaceous; outer one keeled, jagged, and with a short bristle at the end. *Caryopsis* free. *Styles* united to above the middle. *Stigmas* filiform, papillose.—Named after *Leonard Sesler*, an Italian physician and botanist.

1. S. *cærúlea* Scop. (*blue M.*); panicle ovate bracteate slightly unilateral, outer glumella jagged with 4 teeth the midrib rough and produced into short bristle. *E. B.* t. 1613: *Parn. Gr.* t. 27. Cynosurus *L.*

Mountains in the north of England and Scotland, especially abundant

in limestone regions. 4. 4—6. — One of our earliest grasses, and a very beautiful one. The *roots* much tufted. *Culms* 6—12 or 18 inches high. *Leaves* linear, obtuse, with a minute rough point. *Spike* of a shining bluish-grey, with large yellow *anthers* tipped with purple. *Spikelets* generally in pairs, oblong-ovate, the lower ones with an ovate ciliated and toothed bractea at the base. *Glumes* ovate-lanceolate, 3-toothed, middle tooth lengthened into an awn and often bifid, pubescent at the keel and margin. *Florets* longer than the glumes. Outer *glumellas* 1-ribbed, pubescent or ciliated, jagged with about 5 teeth, the middle tooth lengthened into a short awn; inner one bifid at the point.

24. Pánicum *Linn.* Panick-grass. (Tab. VII. f. 21.)

Spikelets flat in front, rounded on the back, 2-flowered, without bristles at the base, usually on one side of the partial *rachis*, and arranged in a compound spike, raceme, or panicle. *Glumes* 2; lower one (in front) small, upper as long as the spikelet. *Lower* (or *anterior*) floret as long as the upper, barren and triandrous or neuter: *glumellas* 1—2; outer with the texture of the upper glume and as long. *Upper floret* perfect; *glumellas* 2, cartilaginous, enveloping and somewhat adhering to the *caryopsis*, neither awned nor setigerous, very rarely mucronulate. — Named from *panis*, *bread*; the seeds of some species being used for bread. — The British species belongs to that section called by Beauvois *Echinochloa*, and distinguished by the *spikelets in a compound raceme, the upper glume and lower glumella of the sterile floret with a long awn-like bristle.*

1. P. (Ech.) **Crus-gálli* L. (*loose P.*); "culms erect tufted at the base, leaves linear acuminate more or less scabrous on the upper side, sheaths glabrous, ligule none, spike compound erect, partial ones alternate unilateral somewhat close-pressed to the compressed triquetrous common rachis, spikelets ovate turgid hispid (greenish), lower glume broadly cordate-ovate with an embracing base mucronate thrice shorter than the spikelet, upper ovate acuminate 5-nerved, neuter floret with 2 glumellas the lower with a longish bristle, caryopsis even gibbous ovate with a hispid point." *E. B.* t. 876. Echinochloa *Beauv.*: *Parn. Gr.* t. 67.

Fields near London. Waste ground near Thetford, Norfolk. ⊙. 7. — The whole group to which the above belongs is in almost inextricable confusion; and we scarcely know what the naturalized British species really is, or whether there may not be several. For the above character of the true *P. Crus galli*, we are indebted to Nees v. Esenbeck.

25. SETARIA *Beauv.* Bristle-grass. (Tab. VII. f. 22.)[1]

Panicle in a compound somewhat cylindrical spike. *Spikelets* flat in front, rounded on the back, 2-flowered, 1—3 together, surrounded by an involucre of bristles (abortive spikelets) and falling away from it. *Glumes* 2, awnless; lower one small, upper as long as the spikelet. *Lower floret* as long as the upper, barren and triandrous or neuter: *glumellas* 1—2; outer one with the texture of the upper glume and as long. *Upper floret* perfect: *glumellas* 2; outer the largest, cartilaginous, enveloping and somewhat adhering to the *caryopsis.*—Named from *seta*, a *bristle.*—To this genus the true *Millets* belong.

1. S. **verticillata* Beauv. (*rough B.*); panicle spiked lobed below, branches whorled, bristles of the involucre rough with reversed teeth, outer glumella of the fruit nearly even, lower floret neuter with 1 glumella. *Parn. Gr.* t. 69. Panicum verticillatum *L.*: *E. B.* t. 874.

In cultivated fields, about London and Norwich. ⊙. 7, 8.

2. S. **víridis* Beauv. (*green B.*); panicle spiked continuous, bristles of the involucre rough with erect teeth, outer glumella of the fruit nearly even, lower floret neuter with one glumella, *Parn. Gr.* t. 68. Panicum viride *L.*: *E. B.* t. 875.

Fields about London, Thetford, and Norwich. ♃. 7, 8.

3. S. **glaúca* Beauv. (*glaucous B.*); panicle spiked continuous, bristles of the involucre rough with erect teeth, outer glumella of the fruit conspicuously wavy wrinkled transversely, lower floret triandrous with 2 glumellas.

Weybridge, Surrey: *Mr Borrer.* New Mill at Hoddesdon, Hertfordshire. ⊙. 9. — *Culm* ascending, branched, angled under the inflorescence. *Leaves* linear-lanceolate, bearded at the base. *Spikelets* about 2 in each involucre, and only half its length: *bristles* many, rigid. Lower *floret* with 3 *stamens*, and 2 *glumellas.* Distinguished by the shorter and more rigid bristles and larger spikelets from *P. penicillatum*, which, along with *P. Italicum*, will, we have no doubt, be placed ere long on the list of spurious indigenous plants.

*** *Spikelets with* 3 *or more, occasionally with only* 2, *fertile flowers. Glumes* 2. (Tab. VII. f. 23—26, and VIII. f. 27—31.) (Gen. 26—34.)

26. PÓA *Linn.* Meadow-grass. (Tab. VII. f. 23.)

Panicle lax or contracted, rarely a simple or compound spike. *Spikelets* awnless, ovate or linear and compressed, or subcylin-

[1] This genus is too closely allied to *Panicum*, and merely differs by some of the spikelets being constantly abortive: there are East Indian species which hold a middle place. Although we have in this work placed *Digitaria* at a considerable distance, most of the species are scarcely different from *Panicum*, while some foreign ones belong to *Paspalum*.

drical, with 3 or more (rarely 2) fertile florets. *Glumes* 2, more or less membranaceous and unequal, shorter than the florets. *Glumellas* 2; outer one subovate, bluntish, rarely tipped with a minute point. *Fruit* free.—Name, πoα, *grass* or *pasturage*, from παω, to *feed;* the whole genus affording an abundant pasturage for cattle.

* *Spikelets linear or subcylindrical (rarely ovate, with the glumes* 1*-nerved). Florets rounded on the back at the base.*

† *Outer glumella with* 7 *prominent ribs and a scarious margin, neither hairy on the ribs, nor webbed at the base, subcylindrical, obtuse. Glumes* 1*-nerved, conspicuously unequal.* Glyceria.

1. P. *aquática* L. (*Reed Meadow grass*); panicle erect very much branched, spikelets linear of about 5—10 obtuse florets which have 7 ribs. *E. B.* t. 1315: *Parn. Gr.* t. 44. Glyceria *Sm.*

Sides of rivers, ponds, and ditches. ♃. 7, 8. — *Root* creeping. *Culm* 4—6 ft. high, erect. *Leaves* linear-lanceolate, rough. *Ligule* short, obtuse. *Glumes* small, ovate, obtuse, membranaceous, smoothish. Outer *glumellas* twice as large as the glumes; inner narrower and bifid at the point.

2. P. *flúitans* Scop. (*floating Meadow-grass*); panicle nearly erect slightly branched, spikelets linear appressed of from 7 to 20 obtuse or slightly acute florets which have seven ribs with short intermediate ones at the base, leaves folded at the midrib, root creeping.—*α.* sheaths of leaves smooth or striate, florets somewhat acute, inner glumella about as long as or projecting beyond the outer one, anther 5 times longer than broad. *Parn. Gr.* t. 95. Festuca *L.* Glyceria *Br.*—*β.* sheaths of leaves sulcate, florets obtuse, inner glumella shorter than the outer one, anther 2—4 times longer than broad. Poa *E. B.* t. 1520: *Parn. Gr.* t. 45. Glyceria *Sm.* G. plicata *Fries.* G. pedicellata *Towns. in Ann. Nat. Hist.* v. (1850), p. 105.

Ditches and stagnant waters, abundant. ♃. 7, 8. — Sometimes confounded with *Festuca pratensis* β., but distinguished by the 1-nerved glumes and 7-ribbed glumellas. — *Culms* 1—3 ft. high, thick and succulent. *Leaves* linear-lanceolate, acute, folded at the keel. *Sheaths* compressed. *Ligule* oblong, pointed. *Panicle* with the branches appressed or divaricate, nearly simple or again branched. *Glumes* unequal, small, ovate, membranaceous, obtuse. *Glumellas* ovate-oblong, sometimes thrice as long as the glumes, but variable in that respect; outer one scabrous, obtuse or slightly acute, sometimes toothed. The *scale* is of 1 thick fleshy piece, which is the principal character of Mr. Brown's genus *Glyceria.* It is found in New Holland. — We cannot perceive any characters besides those now adopted, to distinguish this variable species into varieties: there are, however, two forms of β.; one with the branches of the panicle divaricate in fruit, the rachis more or less rough, and small spikelets (the outer glumellas scarcely

twice as long as broad) as in *E. Bot.*, which seems to be the true *G. plicata* of Fries; the other with the panicle nearly simple and unilateral, rachis smooth and the spikelets nearly as large as in *a.* (where the outer glumella is more than twice as long as broad,) which is *G. pedicellata*, and is intermediate between the true *P. fluitans* and *plicata*. To those readers who rely on such points, and on the form and colour of the anthers, for characters, there must be at least six or eight varities or species in this country and as many, though not quite the same, in N. America.

†† *Outer glumella with 5 usually faint but distinct nerves, membranaceous, cylindrical below, often keeled at the tip, or with a very minute mucro, not webbed at the base. Glumes 3-nerved, unequal.* Sclerochloa. Glyceria *Sm.*

‡ *Root creeping.*

3. P. *marítima* Huds. (*creeping Sea M.*); panicle erect subcoarctate (rigid), spikelets linear of 5—10 obtuse apiculate florets which are faintly 5-nerved, the midrib reaching to the point, leaves usually convolute, root creeping. *E. B.* t. 1140: *Parn. Gr.* tt. 42, 99. Sclerochloa *Lindl.*

Sea-coast, frequent. ♃. 7. — *Culms* 8—15 inches high, rigid, glaucous. Lower branches of the *panicle* usually in pairs, but sometimes 3—5 in luxuriant specimens. *Leaves* involute, somewhat pungent. *Ligule* ovate, bluntish. *Glumes* rather acute, shorter than the lowest continuous *floret*, with 3 ribs. Outer *glumella* firm, purplish, slightly silky at the base, on the central and two lateral ribs.

‡‡ *Root fibrous. Rachis and branches of the panicle rough to the touch.*

4. P. *dístans* L. (*reflexed M.*); panicle spreading, branches at length deflexed, spikelets linear of about 5 (3—6) obtuse florets which are faintly 5-nerved, the midrib not reaching to the points, leaves mostly plane, stem decumbent at the base, root fibrous. *E. B.* t. 986: *Parn. Gr.* tt. 41, 96, 97. Sclerochloa *Bab.* Glyceria *Sm.*

Sandy ground, principally near the sea. Near Dublin. ♃. 7, 8. One foot high. *Leaves* linear, plane, not pungent. *Ligule* short, obtuse. Branches of the *panicle* singularly deflexed, slender; lower ones usually 4—5 together. *Spikelets* not nearly so long as in the last species. *Glumes* much shorter than the contiguous florets, unequal, obtuse, obscurely 3-nerved. Outer *glumella* silky on the midrib, with two lateral nerves at the base. Allied to the last, but distinct in the panicle, smaller spikelets, and fibrous root without rooting scions. *Gl. intermedia* Klingraaf, supposed to be intermediate, is said to have been found at Lazenby, on the Yorkshire coast; but we have seen no specimens.

5. P. *Borréri* (*Borrer's Sea M.*); panicle spreading, in fruit ascending and patent, spikelets linear of 4—7 florets, outer glumella obsoletely 5-nerved obtuse with a minute point formed by the excurrent midrib, leaves flat, roof tufted. *Parn. Gr.*

t. 98. Glyceria *Bab. in E. B. S.* t. 2797. G. conferta *Fries.* Sclerochloa Borreri *Bab.*

Brackish places in the south-east of England, not uncommon, often growing with *P. procumbens* and *P. distans.* ♃. 7. — "May be distinguished from *P. distans* by its ascending branches when in fruit, the spikelets seldom more than 4-flowered, the exterior glumella pointed, and its dorsal nerve extending to the apex; — from *P. procumbens* by its patent branches, its spikelets not more than half the size, and the erect culm; — from *P. maritima* by the patent branches, its spikes about half the size, and the flat leaves." *Bab.* Obviously quite intermediate between *P. distans* and *P. procumbens.* *Gl. remota* Fries, referred here in last edition, seems to have the outer glumella 7-nerved as in the preceding section.

6. P. *procúmbens* Curt. (*procumbent Sea M.*); panicle compact ovate-lanceolate disticho-secund (rigid), spikelets linear-lanceolate of about 4 florets, outer glumella 5-ribbed obtuse with a minute point formed by the excurrent midrib, leaves flat with inflated sheaths, root fibrous. *E. B.* t. 532: *Parn. Gr.* t. 42. Sclerochloa *Beauv.*

Salt-marshes, in various places, apparently not uncommon in England. Very rare in Scotland and Ireland. ☉. 6, 7. — *Culms* procumbent, 6—8 inches long, glaucous. *Leaves* linear, obtuse. *Ligule* short, very blunt. *Panicle* about 2 inches long, branches patent, distichous, their *spikelets* secund. *Glumes* smaller than the florets, obtuse, strongly ribbed. *Florets* oblong, distant upon the rachis, slightly silky at the base.

††† *Outer glumella with 5 faint but distinct nerves, membranaceous, cylindrical below, naked on the nerves and at the base. Glumes 1-nerved, unequal.* Catapodium.

7. P. *rígida* L. (*hard M.*); panicle lanceolate (or sometimes a linear simple spike-like raceme) disticho-secund rigid, spikelets linear acute of 7—10 florets, outer glumella faintly 5-nerved obtuse with a mucro, glumes acute unequal, upper one reaching to the base of the third floret, root fibrous. *E. B.* t. 1371: *Parn. Gr.* t. 43. Sclerochloa *Beauv.*

Walls, rocks, and dry barren soils, frequent. ☉. 6. — Whole plant very rigid and wiry, 3—6 inches long, ascendant or erect. *Leaves* rigid, linear, setaceous. *Ligule* oblong, jagged. *Rachis* angled, sometimes at once bearing the spikelets (when it much resembles the next species) but more usually throwing out branches. *Glumes* nearly as long as the contiguous florets. *Florets* linear-oblong, rather distant, smooth, bluntish; outer *glumella* 5-nerved; the two lateral nerves broad with a white line down the middle, the two intermediate ones very faint.

8. P. *loliácea* Huds. (*dwarf Wheat M.*); spike rigid usually simple unilateral (rarely branched), spikelets linear-oblong of about 8—12 florets, outer glumella faintly 5-nerved obtuse

with a mucro, glumes obtuse nearly equal, upper one reaching to the base of the fourth floret, root fibrous. *Parn. Gr.* t. 43. Triticum *Sm.*: *E. B.* t. 221. Catapodium *Link.* Sclerochloa *Woods.*

Sandy sea-shores of Norfolk, Suffolk, and Essex. North Wales and Isle of Man. East coast of Scotland, and Galloway. ⊙. 6, 7. — Singularly stiff and wiry, as much so as *P. rigida*, which it greatly resembles, branching from the very base, 3—4 inches high. *Leaves* linear, rigid, plane. *Spikelets* more or less distant, secund, lower ones sometimes compound.

** *Spikelets ovate or oblong-ovate. Outer glumella with 3—5 parallel nerves, membranaceous below, scarious at the end, compressed, keeled, pointless. Upper glume 3-ribbed.* Poa.

† *Root creeping by long scions.*

9. P. *compressa* L. (*flat-stemmed M.*); panicle subsecund spreading (afterwards subcoarctate), spikelets oblong of 5—7 obtuse florets, upper sheath as long as or shorter than its leaf, culm compressed, root creeping.—*α.* florets connected by a web, outer glumella with 3 silky nerves, and sometimes 2 glabrous intermediate ones. *E. B.* t. 365: *Parn. Gr.* t. 37. P. subcompressa *Parn. Gr.* t. 90.—*β.* florets not connected by a web, outer glumella 5-nerved. P. polynoda *Parn. Gr.* tt. 39. 91, 92.

On walls, and in dry barren ground, frequent. 4. 6, 7. — One foot or more high, rather glaucous. *Culms* compressed, procumbent at the base: in *α.* the uppermost node is about the middle of the stem; in *β.* there are 7 or 8 nodes, of which the second is usually about the middle of the stem, the uppermost a little above it. *Leaves* short, linear, acute, upper one as long or longer than its sheath. *Ligule* very short, blunt. *Panicle* not much branched. *Florets* by no means always connected by a web; in French and North American specimens, and in those from this country, there is often not the least trace of it, yet they are not otherwise distinguishable. In *α.* there are usually only three nerves to the outer glumella, all of them silky; but an intermediate pair may occasionally be detected, and this constitutes *P. subcompressa* Parn. In *β.* we have always observed 5 nerves, of which sometimes the two lateral ones and the midrib are silky, sometimes only the former, sometimes all are naked.

10. P. *pratensis* L (*smoothed-stalked M.*); panicle diffuse, spikelets oblong-ovate of about 4 florets which are acute 5-nerved webbed, marginal nerves and keel of the outer glumella silky, culm and sheath smooth, upper sheath much longer than its leaf, ligule short, root creeping. *Parn. Gr.* tt. 31, 32, 33, 34. —*α.* culm tall, leaves broad. *E. B.* t. 1073.—*β.* leaves narrow. P. angustifolia *L.*—*γ. subcærulea;* smaller and glaucous. P. subcærulea *E. B.* t. 1004.

Meadows and pastures, frequent. — β. in shady places. — γ. on walls or dry places, especially in alpine countries. 4 6, 7. — Allied to the last in character, but very unlike in general appearance, and more resembling *P. trivialis*, which differs by both the ligule and the root, as well as by the marginal nerves of the outer glumella being always hairy. — β. and γ. appear to be starved states.

†† *Root fibrous, or slightly creeping, but without long scions. Keel of the outer glumella silky.*

‡ *Marginal nerves of the outer glumella glabrous.*

11. P. *triviális* L. (*roughish M.*); panicle diffuse, spikelets oblong-ovate of about 3 florets, which are acute 5-nerved connected by a web, outer glumella silky only on the midrib, upper sheath much longer than its leaf, culms and sheaths roughish, ligule oblong acute, root fibrous. *E. B.* t. 1072: *Parn. Gr.* t. 35.

Meadows and pastures, common. 4. 6, 7. — *Culm* 1—2 ft. high. *Leaves* linear, acute. *Panicle* much branched. — An excellent grass for pasturage and for hay, as is the last species.

‡‡ *Marginal nerves of the outer glumella silky.*

‖ *Root perennial.*

12. P. *bulbósa* L. (*bulbous M.*); panicle close subspicate, spikelets ovate 3—4 flowered, florets silky at the keel and marginal nerves connected by a web, leaves with a white narrow serrate cartilaginous margin, upper sheath much longer than its leaf, ligule prominent acute, stems swollen at the very base. *E. B.* t. 1071: *Parn. Gr.* t. 89.

East and south of England, principally on sandy sea-shores. 4. 4, 5. — A singular and very distinctly marked species, soon withering after flowering, and then its bulbs are blown about in large quantities on the surface of the sand. It forms a great part of the herbage on the *Denes* at Yarmouth.

13. P. *alpína* L. (*alpine M.*); panicle erect spreading when in flower, afterwards somewhat ovate, spikelets ovate of 3—5 acute florets free (not webbed), outer glumella silky on the keel and marginal nerves and downy between them, upper sheath longer than its leaf, leaves broadly linear obtuse, uppermost cymbiform at the apex, ligule of the upper leaves oblong acute, of the lower ones short obtuse, roots fibrous tufted. *E. B.* t. 1003: *Parn. Gr.* tt. 37, 94. P. *cæsia Sm.? E. B.* t. 1719. ?—β. *glomerata;* spikelets densely crowded.

Extremely abundant on the lofty mountains of Scotland and Wales, and very generally viviparous. — β. Banks of the Esk: *G. Don.* 4. 6, 7. — *Culms* 6—12 inches high, nearly erect. *Leaves* mostly short, flat, linear, obtuse, with a very small mucro: uppermost "folded, compressed, and rounded behind the summit." *Parn. Spikelets* rather large, close. *Glumes* ovate-lanceolate, much com-

pressed; dorsal rib scabrous, terminating in a very short point or awn, with two short lateral ribs or nerves at the base. Outer *glumellas* ovate-lanceolate, acute; dorsal rib and two lateral nerves silky, downy between them below; upper part glabrous, purple, margin diaphanous.

14. P. *láxa* Hænk. (*wavy M.*); panicle contracted lax slightly drooping, spikelets ovate, of 3—4 acute florets, outer glumellas silky at the keel and marginal nerves glabrous between them, upper sheath longer than its leaf, upper ligule long and acute, leaves all flat narrow linear acuminate, root fibrous.—P. flexuosa *E. B.* t. 1123.—*α.* panicle somewhat erect, florets connected with a web, outer glumella with two intermediate glabrous nerves. P. minor *Gaud.*—*β.* panicle lax slightly drooping, florets without a web, outer glumella without intermediate nerves. P. laxa *Parn. Gr.* t. 38 (and most others).

Ben Nevis, *Mr. J. Mackay.* Loch na Gar, and Clova mountains, *G. Don* (since confirmed by *Dr. Graham*, &c). ♃. 7, 8.—A very slender subglaucous grass, scarcely able to support the weight of its own *panicle*. *Leaves* more numerous than in *P. alpina*, and much narrower. *Florets* very obscurely ribbed, all very acute, green and purple, with diaphanous margins, sometimes connected by a web, sometimes free, often viviparous. *Glumes* nearly equal. Both varieties have been found in each of the two localities.

15. P. *nemorális* L. (*Wood M.*); panicle slender, spikelets ovate or lanceolate of 2—5 florets, florets silky at the keel and marginal nerves, uppermost sheath usually as short as its leaf, ligule obtuse or truncate, root slightly creeping.—*α.* upper sheath as short as the leaf, ligule extremely short truncate, florets slightly webbed. *E. B.* t. 1265: *Parn. Gr.* t. 36.—*β.* uppermost sheath usually longer than its leaf, ligule extremely short truncate, florets free. P. glauca *Sm.* (partly). P. Parnelli *Bab.*: *E. B. S.* t. 2916: *Parn. Gr.* t. 93.—*γ.* uppermost sheath as short as the leaf, its joint about the middle of the culm, ligule prominent obtuse, spikelets greenish, florets free. P. montana *Parn. Gr.* t. 39.—*δ.* uppermost sheath as short as its leaf, its joints near the base of the culm, ligule prominent obtuse, spikelets purplish, florets free. P. glauca *Sm.* in *E. B.* t. 1720 ?—*ε.* uppermost sheath as short as its leaf, ligule prominent obtuse, florets webbed. P. Balfourii *Parn. Gr.* t. 66.: *E. B. S.* t. 2918.

Common in woods and thickets. — *β.* Snowdon, Cwm Idwell, and other Welsh mountains. Upper Teesdale. — *γ.* Ben Lawers. — *δ.* and *ε.* Scotch mountains. ♃. 6, 7. — A very variable species, and to which we have no hesitation in referring all the above as varieties: and, indeed, although we have arranged them as varieties, in order that our readers may see the characters on which they depend, we remain of the opinion stated in former editions, that all the mo-

tain forms might be advantageously united. As to *P. cæsia* of Smith, referred by Smith himself to his *P. glauca*, there is some doubt: the figure in *E. B.* t. 1719, is rather ambiguous; and Mr. Borrer informs us that he has never seen it except in gardens; perhaps it is merely the fertile form of *P. alpina*, and the root, which, according to Smith, is tufted, not creeping, agrees with that species; but what is usually so called is referable to either *P. glauca* or *P. Balfourii*. We do not know which species Mr. Babington intends by his *P. cæsia*, which he removes to a different section from where *P. nemoralis* is placed. Mr. Babington attributes very short ligules to our γ. as well as to α. and β., characterising *P. Balfourii* alone by the prominent obtuse ligule; but our observations were made on what we were informed was an authentic specimen of *P. montana*, and it had long ligules. In our opinion *P. glauca* and *P. Balfourii*, having broader spikelets than in β. or γ., of 3—5 florets, and usually of a purplish colour, although variable in that respect, are undistinguishable from each other, except by the web of the florets, which however is sometimes almost inconspicuous in Dr. Balfour's own specimens, and disappears by cultivation.

‖ ‖ *Root annual.*

16. P. *ánnua* L. (*annual M.*); panicle subsecund divaricated somewhat triangular, spikelets oblong-ovate of about 5 florets which are a little remote 5-ribbed destitute of web, the midrib and all the nerves more or less silky, upper sheath longer than its leaf, ligule oblong acute, culm ascending compressed, root fibrous. *E. B.* t. 1141: *Parn. Gr.* tt. 40, 41.

Meadows and pastures, and by road-sides, everywhere. ⊙. 4—9. — *Culms* 6—10 inches long, below prostrate and throwing out roots. *Leaves* distichous, linear, rather blunt, flaccid, often waved, bright green. *Glumes* very unequal, ovate-lanceolate, rough at the back, 3-nerved. Outer *glumella* ovate-lanceolate, acute, white and diaphanous at the margin.

27. Triódia *Brown.* Heath-grass. (Tab. VII. f. 24.)

Panicle racemed. *Spikelets* compressed with 2—4 fertile florets. *Glumes* 2, about equal, 3-ribbed, as long as the florets. *Glumellas* 2; outer somewhat coriaceous, rounded on the back, hairy at the base, 3-toothed at the summit; teeth nearly of the same length, middle one straight (sometimes bristle-shaped).— Named from τρεις *three*, and οδους, a tooth.

1. T. *decúmbens* Beauv. (*decumbent H.*); panicle of few racemed spikelets, ligule a tuft of hairs. *Parn. Gr.* t. 30. Poa *E. B.* t. 792. Festuca *L.* Danthonia DC.

Abundant in dry mountain-pastures, heaths, and moors. 4. 7. — *Culm* 1 foot long, procumbent; flowering culms only erect. *Leaves* linear, acuminate, hairy as well as the sheaths. *Glumes* nearly equal, as long as the whole spikelet, lanceolate, acute, 3-nerved with broad thin margins, scabrous on their keels. Outer *glumella* ovate,

5-nerved or ribbed for its whole length, having a small tuft of hairs on each side at the base; apex with three teeth. Inner *glumella* obtuse, entire at the point, ciliated at the angles of the fold. — In habit very distinct from *Poa*.

28. Bríza *Linn.* Quaking-grass. (Tab. VII. f. 25.)

Panicle lax. *Spikelets* much compressed, ovate or deltoid, with 3—8 closely imbricated florets. *Glumes* 2, nearly equal, broad, much shorter than the spikelet. *Glumellas* 2, awnless: outer cymbiform, obtuse, at length coriaceous and rounded on the back below, with a scarious margin; inner small and flat. *Caryopsis* adnate with the *glumellas*.—Name: βριζα, some kind of corn; probably from βριθω, to *droop or bend down*, as do the spikelets, which are most delicately suspended.

1. B. *média* L. (*common Q.*); spikelets broadly ovate of about 7 florets, glumes shorter than the lowermost florets, ligule truncate or obtuse usually very short. *E. B.* t. 340: *Parn. Gr.* t. 30.

Meadows and pastures, frequent. 4. 6. — Whole plant very elegant. *Culms* slender, 1 ft. or more high. *Leaves* short, linear-acuminate. *Branches* of the *panicle* thread-shaped, divaricating, purple. *Spikelets* tremulous with the slightest breeze, very smooth, shining, purple, more or less green or greenish-white at the edges. *Glumes* very concave, subcompressed. Outer *glumella* much like the *glumes*, *inner* one minute, resembling a flat scale.

2. B. *mínor* L. (*small Q.*); spikelets triangular about 7-flowered, glumes longer than the florets, ligule elongated lanceolate acute. *E. B.* t. 1316: *Parn. Gr.* t. 101.

Fields in the extreme south of England, very rare. About Bath and in Cornwall. Guernsey and Jersey. ⊙. 7. — Whole plant much smaller than the last.

29. Dáctylis *Linn.* Cock's-foot-grass. (Tab. VII. f. 26.)

Panicle with the secondary branches short and very dense, subsecund. *Spikelets* with 3 or more florets, compressed, without a bractea at the base. *Glumes* 2, unequal, shorter than the spikelet; lower one keeled. *Glumellas* 2; outer one keeled, and ciliated at the back, 5-nerved, lanceolate, with a short bristle close to the point, inclosing the *caryopsis*.—Except in habit, this genus is scarcely distinguishable from *Poa*, *Koeleria*, and *Festuca*.—Name: δακτυλος, a *finger*.

1. D. *glomeráta* L. (*rough C.*); branches of the panicle with ovate clusters of spikelets, leaves linear flat the margins scabrous, stem erect, root tufted. *E. B.* t. 335: *Parn. Gr.* t. 29.

Way-sides, meadows, and woods, abundant. 4. 6—7. — *Culm* 1—2 feet high. *Leaves* rather broadly linear, acuminate, scabrous,

Panicles secund. *Spikelets* of 3—4 florets, thickly clustered on the branches, clusters ovate : branches sometimes long distant and spreading, sometimes short and approximated, when the whole panicle resembles a single cluster. *Glumes* membranaceous, smaller than the lowermost *floret*, lanceolate, acuminate, unequal, glabrous, scabrous at the back, more or less obliquely keeled. Outer *glumella* subcartilaginous, lanceolate, much compressed, scabrous, 5-ribbed, ciliated at the keel, with a short awn close to the point. Said to be advantageously cultivated for cattle.

30. Cynosúrus *Linn.* Dog's-tail-grass. (Tab. VIII. f. 27.)

Panicle spiked, unilateral. *Spikelets* with 2—5 perfect *florets*, distichous, with a pectinated bractea or involucre (an abortive spikelet) at its base. *Glumes* 2, equal, membranaceous, much shorter than the spikelet, 1-nerved, keeled, shortly awned. *Glumellas* 2, membranaceous, linear-lanceolate; outer awned below the extremity or mucronate, faintly 5-nerved.—Named from κυων, a *dog*, and ουρα, a *tail*; from the shape of its spike.

1. C. *cristátus* L. (*crested D.*); raceme in a linear spike, florets with a very short awn. *E. B.* t. 316: *Parn. Gr.* t. 28.

Dry pastures, frequent. ♃. 7. — *Stem* 1—1½ foot high, slender. *Leaves* narrow, linear, acuminate. *Raceme* secund. *Involucres* beautifully pectinated, one at the base of each spikelet, their divisions linear, acute, greenish, subglumaceous, a little curved, rough. *Spikelets* 3—5-flowered. *Glumes* lanceolate, nearly equal, membranaceous, rough at the keel, as long as the floret. Outer *glumella* lanceolate, obscurely nerved, green, scabrous, especially at the keel, terminating in a short rough awn; inner one white, bifid, pubescent at the angles of the fold. — A valuable agricultural grass.

2. C. *echinátus* L. (*tough D.*): raceme in an ovate spike, florets with awns as long as the glumellas. *E. B.* t. 1333: *Parn. Gr.* t. 28, 129.

Sandy sea-shores of the extreme south of England, as Kent and Sussex. Field at Hough-End, 2 m. south of Manchester. Guernsey and Jersey. ☉. 7.

31. Festúca *Linn.* Fescue-grass. (Tab. VIII. f. 28.)

Panicle lax or coarctate. *Spikelets* many-flowered, more or less laterally compressed, without a bractea on the base. *Glumes* 2, unequal, membranaceous, usually keeled, much shorter than the spikelet. *Glumellas* 2, lanceolate; outer rounded on the back, acuminate or awned at or close to the summit, the lateral nerves slightly converging and disappearing below the summit; inner minutely ciliated at the ribs. *Styles* terminal. *Caryopsis* glabrous, free.—Name of uncertain origin; the Romans applied it in various ways, and among others to a grass.

* *Root-leaves very narrow, not broader than those of the culm. Awn of the floret terminal.*

† *Florets monandrous, shorter than their awns. Glumes very unequal.*

Vulpia.

1. F. *uniglúmis* Soland. (*single-glumed F.*); panicle a simple erect two-ranked subsecund raceme, lower glume very minute, florets not ciliated. *E. B.* t. 1430: *Parn. Gr.* t. 112.

On the sandy sea-coast, principally of Sussex. On the coasts of Essex, Suffolk, Dorsetshire, and Anglesea. ⊙. 6. — A plant remarkable for the minuteness and apparent suppression of one of its *glumes*, by which the species is at once known.

2. F. *bromoídes* L. (*barren F.*); panicle secund, glumes very unequal the upper one as long as the lowermost contiguous floret, florets not ciliated scabrous towards the summit.—*α.* flowering panicle erect-patent, culm above leafless. *E. B.* t. 1411: *Parn. Gr.* tt. 54, 55.—*β.* panicle drooping at the end, culm sheathed and leafy to near the panicle. *Parn. Gr.* t. 111. F. Myurus *Sm.* (not L.): *E. B.* t. 1412. F. pseudo-myurus *Koch.*

Dry pastures and on walls, less frequent in Scotland, but not rare about Edinburgh. —*β.* frequent in England; rare in Scotland, as at Forfar. ⊙. 6. — *Culms* 6—12 inches high. *Leaves* linear, setaceous, complicate. *Glumes* very unequal, lanceolate, acuminate, rough at the keel; lower one sometimes minute, occasionally half as long as the upper, usually about a third of its length, 1-nerved; upper 3-nerved, and scarcely ever shorter than the lowest floret (exclusive of its awn) on the same side. Lower *glumella* scabrous towards the point. *Awn* often twice as long as its floret. In *F. Myurus* L. (*Parn. Gr.* t. 55.) the upper glume is only half as long as the lowermost contiguous floret, and the florets are tubercular-scabrous on the back above the middle.

†† *Florets triandrous longer than their awns.*

3. F. *ovína* L. (*Sheep's F.*); panicle subsecund subcoarctate, spikelets oblong of about 4—7 florets with short awns, leaves flat or involute-setaceous, ligule 2-lobed.—*α.* culms short somewhat 4-angled and scabrous-pubescent below the small panicle, leaves involute-setaceous, root fibrous tufted. *E. B.* t. 585: *Parn. Gr.* tt. 56, 57. F. vivipara *Sm.*: *E. B.* t. 1355. F. cæsia *Sm.*: *E. B.* t. 1917. F. tenuifolia *Sibth.*—*β.* culms taller many-angled and somewhat glabrous below the broader panicle, leaves of the culm often flat but afterwards usually involute, root tufted or slightly creeping. F. duriuscula *L.*: *E. B.* t. 470: *Parn. Gr.* tt. 58, 59, 60.— *γ.* culms usually tall many-angled and glabrous below the often broadish panicle, leaves of the culm flat at length sometimes involute, root

creeping, the scions ending in erect shoots with distichous leaves. F. rubra *L.*: *E. B.* t. 2056. F. duriuscula *var. Parn. Gr.* t. 60.

α. Abundant in dry and elevated pastures. — β. Pastures and waste ground. — γ. Light sandy or rarely in wet places. ♃. 6, 7. — Whole plant more or less glaucous, and having a purple tint in the spikelets.—*Root* of α. much tufted and scarcely at all creeping, with numerous, mostly short, often curved leaves, which afford excellent food for sheep in hilly situations; in β. it is less tufted and shows a greater tendency to creep; while in γ., at least when growing in sand, it is extensively creeping.[1] *Culms* in α. seldom above a foot high, often only half that height, while in the two other varieties it is seldom so short as one foot, usually more, and sometimes upwards of 2 feet high. *Panicle* of α. usually small and narrow, often scarcely 1½ inch long; in β. and γ. it varies from 1½ to 4 inches long. *Glumes* nearly glabrous, scarcely half the length of the lowermost floret on the same side. *Florets* in all the *varieties* sometimes nearly glabrous, sometimes pubescent upward or even hairy all over, terminated by an awn which very rarely exceeds half the length of the *glumella*, often considerably shorter and sometimes obsolete: the two first varieties are frequently viviparous in mountainous situations. After a careful reconsideration of these plants, we recur to the opinion, given about 30 years ago, in the *Flora Scotica*, that *F. rubra* is not distinct from *F. duriuscula*: the usual forms of *F. duriuscula* and *F. ovina* present a considerable difference to the eye, but there is a deficiency of characters: we therefore prefer uniting them, while mentioning all the alleged distinctive marks.

** *Root-leaves flat, broader than those of the culm. Bristle or awn (when present) arising from below the summit of the outer glumella.* Schedonorus.[2]

† *Ligule of the uppermost sheath prominent, obtuse. Outer glumella 3-nerved.*

4. F. *sylvática* Vill. (*Reed F.*); panicle subsecund much branched spreading nearly erect, spikelets of 3—5 acute awnless scabrous 3-nerved florets, outer leaves linear-lanceolate. Poa *Pollich*: *Parn. Gr.* tt. 44, 100. F. Calamaria *Sm.*: *E. B.* t. 1005.—β. *minor*; leaves narrower, florets about 2. F. decidua *B. E.* t. 2266.

Mountain-woods, not uncommon. ♃. 7.— *Culms* 2—3 feet high, with broad *leaves*. *Glumes* narrow, linear-lanceolate, very unequal,

[1] "We have a series in this tribe in the structure of the root: first *tenuifolia*, which seems to have the least of a creeping rhizoma; then *ovina* and *duriuscula*, where it is very slender; next *rubra*, of our hills and meadows, where it is stouter and perhaps 2 or 3 inches long; and lastly that of the sand-hills, where it is sometimes as many feet." *Woods* in Phytol. iii. p. 261.

[2] From σχεδον, *near*, and ὀρος, the *extremity*; in allusion to the awn, not as often misprinted *Schenodorus*, though Pal. de Beauvois, the authority for the genus, prints it *Schenodorus* in his Index. Nees v. Esenbeck remarks that, in the species of *Festuca*, the hypogynous scales are 2-toothed; in *Schedonorus*, lanceolate and entire, and in *Bromus*, obovate and entire.

smaller one single-nerved, larger one thickened at the margin and as if 3-nerved. *Florets* rather distant on the rachis. Outer *glumellas* lanceolate-acuminate, scabrous, often also denticulate on the midrib throughout.

†† *Ligule of the uppermost sheath very short, scarcely perceptible. Outer glumella 5-ribbed.*[1] Bucetum *Parn.*

5. F. *praténsis* Huds. (*meadow F.*); panicle close never divaricated, branches in pairs one bearing a single spikelet, the other a solitary or several spikelets sometimes wanting, spikelets 5—10 flowered, outer glumella 5-ribbed with a very short or obsolete awn, leaves linear-lanceolate.—*α.* some or all of the branches of the panicle in pairs, one usually with several spikelets. *E. B.* t. 1592: Bucetum *Parn. Gr.* t. 46.—*β.* branches of the panicle solitary reduced to a single spikelet which is sessile or shortly stalked below. F. loliacea *Sm.*? *E. B.* t. 1821? Bucetum lol. *Parn. Gr.* tt. 45. 113, 114.

Moist meadows and pastures, banks of rivers, &c., common. — *β.* more rare. ♃. 6, 7. — It is probable that there are two plants confused under the name of *F. loliacea*: one, which is the *Bucetum loliaceum* Parn., with only 3 ribs to the outer glume, and these not very strongly developed: another in which the outer glume is flat, with 5—8 very strong whitish ribs, thus agreeing better with Smith's description, as it otherwise does with the figure; in it the spikelets are all solitary, almost quite sessile, and awnless. This we should have retained as a distinct species, did not Parnell figure at t. 114. an intermediate form, having a convex slightly keeled 5-nerved larger glume, which, however, we have not seen.

6. F. *elátior* L. (*Tall F.*); panicle diffuse patent much branched, branches divaricated after flowering mostly in pairs each with 2 or more (usually numerous) spikelets, spikelets 5—6-flowered, outer glumella 5-ribbed with a very short or obsolete nearly terminal awn, leaves linear-lanceolate. *E. B.* t. 1593. Bucetum *Parn. Gr.* tt. 46, 47. F. arundinacea *Schreb.*

Moist pastures and banks of rivers, not unfrequent. ♃. 6, 7. — We have a specimen "from the side of the river Esk," with the panicle coarctate; but as it is only in flower it may afterwards assume the divaricated appearance which best characterizes the present from the next species: it is the *F. longifolia* Don, and has been recognized by Nees v. Esenbeck as certainly belonging to *F. elatior*. Mr. Borrer is of opinion that we have two plants in this country, one *F. elatior*, the other *F. arundinacea*; but we have not seen illustrative specimens.

7. F. *gigántea* Vill. (*tall-bearded F.*); panicle branched drooping towards one side, spikelets lanceolate 3—6-flowered awned,

[1] This character applies to all our British species of *Festuca*, except *F. sylvatica*, which Dr. Parnell places in *Poa*. In *Bromus* the ligule of the uppermost sheath is also prominent.

outer glumella 5-nerved rather shorter than its infraterminal awn, leaves linear-lanceolate ribbed.—*α.* panicle larger and more drooping, spikelets about 5-flowered. *E. B.* t. 1820. Bromus *L.* Bucetum *Parn. Gr.* t. 47.—*β.* panicle smaller and more erect, spikelets fewer about 3-flowered, leaves narrower. F. triflora *Sm.*: *E. B.* t. 1918.

Shady woods and moist hedges. — *β.* in Norfolk, and near Forfar in Scotland, probably not unfrequent. ♃. 7, 8.— A sea-side grass, 3—4 feet high, with broad *leaves*, having the habit and some of the characters of *Bromus*, but usually arranged by authors with *Festuca*. *Ligule* of the uppermost sheath very short. *Panicle* large. *Spikelets* with 3—6 *florets*. *Glumes* very unequal, larger ones with 3 ribs. Outer *glumella* lanceolate, obscurely ribbed, nearly glabrous, membranaceous at the edge upward; the dorsal rib nearly smooth, not extending to the apex, but terminating in the *awn*, which is thus inserted a little below the bifid point, and is twice as long as the glumella: inner *glumella* scabrous or very minutely ciliated on the nerves. *Styles* certainly terminal.

32. Brómus *Linn.* Brome-grass. (Tab. VIII. f. 29.)

Panicle lax or coarctate. *Spikelets* many-flowered, more or less laterally compressed. *Glumes* 2, unequal, usually keeled, equal to or shorter than the lowermost florets. *Glumellas* 2, herbaceous; outer one rounded on the back, two of the lateral nerves usually uniting with the middle one and forming an awn below the bifid extremity; inner one conspicuously ciliated on the ribs. *Styles* from below the summit of the *caryopsis*, which is villous at the apex and "adheres to the upper *glumellas*."— Named from βρομος, given by the Greeks to a kind of *oat*, and that again from βρομα, food.

* *Lower glume with one, upper with 3—5 nerves. Florets lanceolate.*

1. B. *erectus* Huds. (*upright* B.); panicle simple erect, spikelets linear-lanceolate, florets subcylindrical remote about twice as long as the straight awn diverging in flower afterwards erect, outer glumella obscurely 7-nerved, that of the lowermost floret one-third longer than the smaller glume, sheaths somewhat hairy the hairs pointing upwards, root-leaves very narrow ciliated. — *α.* spikelets glabrous. *E. B.* t. 471 : *Parn. Gr.* t. 51.—*β.* culms and spiklets hairy.

In fields and by road-sides, especially in a sandy soil over chalk. In the King's Park, Edinburgh. ♃. 6, 7.— *Culms*, 2—3 feet high. This is truly perennial, which does not appear to be the case with any other *Bromus*. Its habit is that of *Brachypodium sylvaticum*. The *root-leaves* are narrow: *upper leaf* much broader. *Spikelets* erect. *Awn* shorter than the larger glume.

2. B. *ásper* L. (*hairy Wood B.*); panicle slightly branched drooping, spikelets linear-lanceolate, florets remote subcylindri-

cal hairy about twice as long as the straight awn, diverging in flower afterwards erect, outer glumella 5—7-ribbed, that of the lowermost floret twice as long as the smaller glume, sheaths with hairs pointing downwards, leaves uniform the lower ones hairy. *E. B.* t. 1172: *Parn. Gr.* t. 51.

Moist woods and hedges. ⊙. or ♂. *Sm.* (♃. *Schrad.*). 6, 7. — *Culm* 4—6 feet high; *leaves* broad. *Awn* shorter than the larger glume.

3. B. *stérilis* L. (*barren B.*); panicle drooping slightly branched, spikelets linear-lanceolate, florets remote subcylindrical scabrous shorter than the straight awn diverging during and after flowering, outer glumella with 7 distinct equidistant ribs, leaves and sheaths pubescent. *E. B.* t. 1030: *Parn. Gr.* t. 50.

Waste ground, fields and hedges; common. ⊙. 6. — *Culm* 2 feet high. Remarkable for its long, narrow, much-awned, and drooping *spikelets.*

4. B. *diándrus* Curt. (*upright annual B.*); panicle erect slightly branched, spikelets linear-lanceolate, florets remote subcylindrical subscabrous about as long as the straight awn diverging during and after flowering, outer glumella 7-ribbed, scarcely longer than the inner one, rib on each side of the dorsal one obscure, two marginal ones approximated, stamens 2 (3, *Schrad.*), lower sheaths with hairs pointing downwards. — *α.* stem glabrous, rachis and pedicels scabrous. *E. B.* t. 1006: *Parn. Gr.* t. 50. B. Madritensis *L.* — *β.* panicle compact, upper part of the stem, rachis, glumes and very short pedicels pubescent. B. rigidus *Roth.*

Rare, on sandy barrer wastes, principally in the south of England. About Edinburgh and coast of Fife, Scotland (occasionally). ⊙. 6, 7. — One foot high. Allied to *B. sterilis*; but the *panicle* is smaller, erect, or erect-patent, often purplish. From this, *B. tectorum* (introduced near the new mill at Hoddesdon, Hertfordshire) is principally distinguished by the unilateral drooping panicle, and the outer glumella much longer than the inner one.

5. B. *máximus* Desf. (*great B.*); panicle erect lax at length nodding slightly branched, spikelets lanceolate downy long-stalked after flowering, florets remote subcylindrical downy about half the length of the straight awns diverging during and after flowering distinctly 7-ribbed, outer glumella of the lowest floret equal to the larger glume, leaves downy on both sides. *E. B. S.* t. 2820: *Parn. Gr.* t. 115.

On the sands of St. Aubin's Bay, the Grève d'Azette and the Quenvais, Jersey. ⊙. 6 7. — Distinguished by its long awns, the larger glume being as long as the adjacent glumella, the conspicuous equidistant 7 nerves to the glumella, and "by a sharp conical point at the base of the florets." *Parn.* *Stamens* often only 2.

** *Lower glume with 3—5, upper with 7—9 nerves. Florets oblong, turgid, erect.* Serrafalcus.

† *Outer glumella 7-nerved.*

6. B. *secalínus* L. (*smooth Rye B.*); "panicle loose drooping in fruit, lower peduncles slightly branched, simple peduncles about equalling the oblong compressed glabrous spikelets, florets at first imbricated afterwards distinct cylindrical, the incurved edges of the glumellas not overlapping those of the floret above them, awn straight about as long as the floret, leaves hairy but the sheaths nearly glabrous." *Wats.* in *Hook. Lond. Journ. of Bot.* i. p. 85. Serrafalcus *Bab.*—*a.* spikelets scabrous but glabrous and shining not downy. *E. B.* t. 1171 (*good, but panicle too long*): *Parn. Gr.* tt. 49, 121, 122.—*β.* panicle nearly simple, spikelets downy. *Parn. Gr.* t. 123. B. velutinus *Sm.* B. multiflorus *E. B.* t. 1884.

Corn-fields, not rare. ⊙ or ♂. 6, 7. — *Culm* 2—3 feet high. Known in fruit by its hairy panicle, and separately rolled up flowers. Distinguished also from its allies by "the apex of the larger glume being situated half-way between the base of the glume and the summit of the second floret on the same side;" and by having the outer glumella "rounded on the upper margin, with the breadth (when flattened) considerably greater than half its length." *Parnell.*

7. B. *commutátus* Schrad. (*tumid Field B.*); "panicle loose slightly drooping in fruit, lower peduncles often elongated and branched, simple peduncles equalling or exceeding in length the oblong-lanceolate glabrous spikelets, florets loosely imbricated, when in fruit the glumellas only slightly overlapping at their edges near the base, awn straight about as long as the floret, leaves and their sheaths hairy." *H. Wats.* in *Hook. Lond. Journ. of Bot.* i. p. 84: *Parn. Gr.* tt. 124, 125. B. arvensis *Parn. Gr.* t. 49. Serrafalcus *Bab.* B. pratensis *E. B.* t. 920 (*small specimen*).

Road-sides and corn-fields, frequent. ⊙ or ♂. 6, 7.—This species, says Mr. H. Watson, who has studied the British Brome-grasses with great attention, is known by its glossy grey-green spikelets acquiring a brownish tinge in sunny spots, its longer and harsher peduncles than those of *B. mollis* and *racemosus*, and its glumellas larger and more inflated than in *B. secalinus* and *arvensis*. Apex of the larger *glume* half-way (or a little more) between its base and the summit of the second floret on the same side. Inner *glumella* shorter than the outer one, and only reaching to the base of the awn, which is rather shorter than its floret; outer *glumella* when flattened, twice as long as broad, 7-ribbed. Dr. Parnell refers without doubt, *E. B.* t. 920, to his *B. mollis* var. *pratensis*, Gr. t. 118. Smith himself, in the E. Flora, considered it to represent *B. racemosus*; but Dickson's plant (Hort. Sicc. 18. 5.), referred to by Smith, is that form of *B. commutatus* figured by Parnell at t. 124. Mr. Baker finds in Yorkshire a pratal form, which has the spikelets quite separate, in fruit, as in *B. secalinus*.

8. B. *racemósus* L. (*smooth B.*) ; "panicle elongated erect in fruit, peduncles nearly simple about equal to the ovate subcompressed glabrous spikelets, florets imbricated compressed, awn straight about as long as the glume, sheaths of the leaves slightly hairy." *H. Wats.* in *Hook. Lond. Journ. of Bot.* i. p. 84 : *E. B.* t. 1079 : *Parn. Gr.* tt. 48, 119. Serrafalcus *Parl.*—"β. panicle nearly or quite simple, peduncles very short." *Bab.*

Meadows and pastures. — β. sandy ground in the south. ⊙ or ♂. 6. — To us this appears scarcely different from the last, except in being more glabrous : as in it, the summit of the larger *glume* is midway between its base and the summit of the third *floret* on the same side. Dr. Parnell remarks that when the outer glumella is opened out, its upper margins form an angle at the point, giving it a lanceolate or acuminate form, instead of being nearly rounded as in *B. mollis*. Dr. Schultz proposes to unite *B. racemosus* L., *B. commutatus* Schr., and *B. secalinus*, under the name of *B. mutabilis :* the two former have the sheaths, especially the lower ones, hairy : in the last they are glabrous. *B. mollis* he distinguishes by being more densely pubescent, and by having the sheaths and leaves distinctly longitudinally furrowed with elevated nerves.

9. B. *móllis* L. (*soft B.*); "panicle close ovate erect in fruit, slightly branched, simple peduncles shorter than the crowded ovate somewhat compressed pubescent spikelets, flowers closely imbricated, awn straight about as long as the florets, sheaths of the leaves pubescent or hairy." *H. Wats.* in *Hook. Lond. Journ. of Bot.* i. p. 84 : *E. B.* t. 1078 (*good*) : *Parn. Gr.* tt. 48, 116, 117, 118. Serrafalcus *Parl.*—β. panicle quite simple, peduncles very short, leaves and spikelets densely pubescent.

Meadows, pastures, banks, road-sides, fields, &c. everywhere. — β. sandy ground, Lizard. Cornwall. ⊙ or ♂. 6. — *Culm* 1—2 ft. high. *Panicle* 2—3 inches long. *Spikelets* standing nearly erect. *Florets* 5—10. Outer *glumellas* convex, by no means forming such cylindrical florets as in the two last species. Apex of the larger *glume* half-way between its base and the summit of the third floret on the same side, sometimes a little longer, as in Mr. Parnell's *var. ovalis*, tab. 117. (where the *spikelets* are shorter than usual), and sometimes reaching almost half-way to the summit of the fourth floret on the same side (*var. pratensis*, tab. 118.). The *glumes* and outer *glumellas* are downy, but are not otherwise scabrous on the midrib : in the next species they are toothed or scabrous towards the summit, although otherwise glabrous : *Parn.*

10. B. * *arvénsis* L. (*taper Field B.*); "panicle spreading loose slightly drooping in fruit, lower peduncles much elongated simple or branched, simple peduncles longer than the linear-lanceolate compressed spikelets, florets imbricated in fruit, glumellas shorter than the awns with 2 prominent ribs on each side near the margin." *H. Wats.* in *Hook. Lond. Journ. of Bot.* p. 85 : *E. B.* t. 1984 (*glumes too narrow*) : *Parn. Gr.* t. 126. Serrafalcus *Godr.*

Southampton Bay; Coast of Durham; near Hebden Bridge, Yorkshire; Box-Hill. ⊙. 7, 8. — "This has longer peduncles than the 3 preceding species, and the smallest *glumellas*, the latter resembling those of *B. commutatus* in acquiring the purple tinge, but differing in the prominent ribs or nerves on each side:" *Mr. H. C. Watson* (who, however, considers this species not to be really a native of Britain). Dr. Parnell remarks that it is readily distinguished from *B. commutatus* by the inner glumella being acute and as long as the outer one, which is 7-ribbed, two of the ribs being prominent near each margin. Apex of the larger *glume* reaching half-way from its base to the summit of the second *floret* on the same side. *Awns* rather longer than the *glumellas*, straight, slightly spreading when dry. *Anther* four times as long as broad.

†† *Outer glumella 9-nerved.*

11. B. * *pátulus* Koch (*Spreading B.*); panicle spreading loose drooping in fruit, lower peduncles much elongated simple or branched, simple peduncles scarcely longer than the linear-lanceolate compressed spikelets, florets imbricated in fruit, glumellas rather shorter than the nearly straight awns with 3 prominent ribs on each side. *Parn. Gr.* t. 127. Serrafalcus *Bab.*

Near Hebden Bridge, Yorkshire; *Mr. Gibson.* ⊙. 6. — Certainly introduced. Inner *glumella* shorter than the outer, and only reaching to the base of the awn. *Awns* slightly spreading when dry. Apex of the larger glume reaching midway from its base to the summit of the second *floret* on the same side. *Anthers* twice as long as broad. With this we are imperfectly acquainted; it seems too closely allied to the last, and, according to Mr. Babington, has the *glumella*, like it, sometimes only 7-nerved.

12. B.* *squarrósus* L. (*Corn B.*); panicle drooping, peduncles simple lower ones about as long as the oblong or ovate-lanceolate subcompressed spikelets, florets imbricated in fruit nearly glabrous, glumellas about as long as the at length divaricating awns with 3 prominent ribs on each side, leaves pubescent. *E. B.* t. 1885: *Parn. Gr.* t. 118. Serrafalcus *Bab.*

Corn-fields; Somersetshire, Essex, Kent, and Surrey. ⊙. 6, 7. —A most distinct species, remarkable for its spreading awns: it is however certainly an introduced plant, and we fear *B. secalinus* and *commutatus* are equally doubtful natives. Inner *glumella* shorter than the outer, and reaching only to the base of the awn. Apex of the larger *glume* reaching half-way from its base to the summit of the second floret on the same side. *Anthers* twice as long as broad.

33. Avéna *Linn.* Oat, or Oat-grass. (Tab. VIII. f. 30.)

Panicle lax. *Spikelets* laterally compressed, with 2 or more perfect florets and sometimes 1 or more rudimentary neuter

ones. *Glumes* 2, membranaceous, 3- or many nerved. *Glumellas* 2, lanceolate, hairy at the base, herbaceous, at length cartilaginous and firmly inclosing the *caryopsis;* outer one with a long twisted geniculate dorsal awn, with two points or bristles at the summit.—Name of doubtful origin, which we cannot trace to any language older than the Latin; perhaps, therefore, from *fœnum, hay.*

* *Smaller glume 5—7-nerved, larger one 5—11 nerved. Outer glumella 6—8-nerved. Spikelets ultimately drooping. Ovary hairy at the top. Annual plants.*

1. A. *fátua* L. (*wild O.*); panicle erect, spikelets drooping of about 3 scabrous much-awned florets smaller than the glumes with long fulvous hairs at the base, outer glumella bifid at the summit, root fibrous. *E. B.* t. 2221: *Parn. Gr.* t. 27.

Corn-fields, frequent. ☉. 6—8. — *Culm* 2—3 feet high. *Leaves* linear-lanceolate. *Ligule* obtuse. *Glumes* large, membranous, ovate-lanceolate, shining at the margins, keeled, acuminate, many-ribbed. Outer *glumella* with long fulvous hairs at its base, bifid at the point. *Awn* of each floret long and twisted, and constituting an excellent hygrometer. — The cultivated Oat, *A. sativa*, differs from it in having one or more upper florets imperfect and awnless, in the shorter awn and absence of fulvous hairs at the base of the florets.

2. A. *strigósa* Schreb. (*Bristle-pointed O.*); panicle erect, branches all secund, spikelets of 2 perfect florets each awned as long as the glumes and terminated by 2 long straight bristles. *E. B.* t. 1266: *Parn. Gr.* t. 26.

Corn-fields; common both in England and Scotland. ☉. 6, 7. — *Ligule* oblong, often ragged. Very much like *A. sativa*, but readily distinguished from it, as well as from *A. fatua*, by the florets ending in two long bristles.

** *Smaller glume 1—3-nerved, larger one 3-nerved. Outer glumella distinctly 5-ribbed. Spikelets erect. Ovary hairy at the top. Ligule acute. Perennial plants.*

3. A. *praténsis* L. (*narrow-leaved perennial O.*); panicle erect simple or slightly compound lax, spikelets erect oblong compressed of 3—6 florets, lower floret scarcely so long as the larger glume, leaves glabrous but more or less scabrous on the surface, root tufted.—*α. vulgaris;* lower leaves involute, sheaths rounded nearly smooth, spikelets 3—5-flowered. *E. B.* t. 1204. Trisetum. *Parn. Gr.* t. 52.—*β. longifolia;* lower leaves long flat and linear, sheaths flattish slightly keeled roughish. Trisetum *Parn. Gr.* t. 52.—*γ. alpina;* lower leaves short flat, sheaths rounded or compressed roughish, spikelets 5—6-flowered. Trisetum *Parn. Gr.* t. 53. A. alpina *Sm.* A. planiculmis *E. B.* t. 2141.

Dry pastures, heathy and mountainous places. — β. "moist shady woods near the sea, in the neighbourhood of Edinburgh." — γ. Highland mountains. ♃. 6, 7. — Lower peduncles mostly in pairs, one longer than the other, and both simple; sometimes the longer one bears 2 or rarely 3 distant spikelets, so that the whole panicle has a lax appearance, very different from what we find in the next; but as it is now ascertained that *A. pratensis* has occasionally the sheaths flattened, there is a possibility that *A. planiculmis* may be only another form of it.

4. A. *planiculmis* Schrad. (*flat-stemmed O.*); panicle erect compound interrupted, spikelets erect nearly cylindrical linear-oblong of 5—7 florets, lower floret longer than the longest glume, leaves scabrous broadly linear suddenly acute minutely serrated, sheaths flat sharply carinated scabrous, lower part of the culm slightly compressed two-edged. *E. B. S.* t. 2684.

Glen Sannox, on the ascent of Goat-Fell from Loch Rannoch, Isle of Arran, Scotland: *Mr. Stuart Murray* (1826). ♃. 7. This has been cultivated ever since 1826 (from roots brought by Mr. Murray, and who alone here found it) in the Glasgow Botanic Garden, where it preserves all its characters, of which none are so striking as the flat, sharply carinated sheaths and the great breadth of its leaves, which in cultivated specimens (where the plant is nearly 3 feet high) are ½ an inch in breadth. Their width, too, is almost equal throughout, at the extremity suddenly coming to a sharp point. *Panicle* with many, erect, rather rigid branches. *Spikelets* much longer and larger than in *A. alpina*, the larger glume scarcely reaching half-way to the summit: in *A. pratensis* and *A. alpina* Sm. the larger glume is about two thirds (or more) of the length of the whole spikelet.

5. A. *pubéscens* L. (*downy O.*); panicle erect nearly simple, spikelets erect of about 2 or 3 florets, scarcely longer than the glumes, lower leaves plane and the sheaths downy, edges smooth. *E. B.* t. 1640. Trisetum *Pers.*: *Parn. Gr.* t. 53.

Dry pastures, especially in chalky or limestone countries. ♃. 6, 7.

*** *Smaller glume* 1-*nerved, larger* 3-*ribbed. Outer glumella keeled, with faint lateral nerves, ending in two bristles. Spikelets erect. Ovary glabrous. Ligule short and obtuse. Perennial plants.*

6. A. *flavéscens* L. (*yellow O.*); panicle much branched lax, spikelets of about 3 florets equal in length to the longer of the very unequal glumes, outer glumella with two terminal bristles, lower leaves and sheaths hairy. *E. B.* t. 952. Trisetum *Beauv.*: *Parn. Gr.* t. 54.

Dry meadows and pastures, frequent. ♃. 7. — It has the smallest flowers of all our *Oat-grasses*, and may readily be distinguished by that circumstance, by the two terminal bristles on the outer *glumella*, and by the very unequal *glumes*. *Pedicels* of the *florets* downy with a small tuft of hairs at the top, and there is also a terminal abortive floret, reduced to a stalked bristle, hairy at its base.

34. PHRAGMÍTES *Trin.* Reed. (Tab. VIII. f. 31.)

Panicle loose. *Spikelets* distichous, with 3—4 many distant perfect florets and a barren one at the base, which are all enveloped in long silky hairs attached to the rachis of the spikelet. *Glumes* 2, membranaceous, unequal, shorter than the floret, the lower much smaller. *Glumellas* 2, membranaceous; outer ending in a long subulate awnless point.—Name: φραγμιτης, an *enclosure*, or *materials for an enclosure*, these reeds being used for that purpose.

1. P. *commúnis* Trin. (*common R.*); panicle spreading, spikelets coloured about 5-flowered longer than the glumes, leaves lanceolate acuminate-cuspidate. Arundo Phragmites *L.*: *E. B.* t. 401: *Parn. Gr.* t. 29.

Abundant in ditches, margins of lakes, rivers, &c. ♃. 7, 8. — *Culms* 6 ft. or more high, usually erect, rarely prostrate and very long (20—40 feet). (*Bromfield.*) *Panicle* large, purplish-brown, at length drooping, very handsome. *Glumes* very unequal: lower ovate-lanceolate, many ribbed; upper twice as long, thin, membranaceous, obsoletely ribbed. As the flowers advance, the tufts of hair increase, at length becoming very silky. This plant frequently forms patches of immense extent, called *Reed-ronds* in some parts of the east of England, which harbour many aquatic birds, and the rare *Parus biarmicus* or *bearded tit-mouse*. Much use is made of the culms, for thatching, garden-screens, for walls and floors which are afterwards covered with clay, &c.

b. *Spikelets spiked, either sessile or shortly stalked, and arranged in a simple or compound spike or spike-like raceme.* (Tab. IX. f. 42. *e. f. g.* (Gen. 35—44.)

* *Spikelets inserted on different sides of the common axis or rachis, sometimes slightly unilateral.* (Tab. IX. f. 42. *e. f.*) (Gen. 35—41.)

35. E'LYMUS *Linn.* Lyme-grass. (Tab. VIII. f. 32.)

Spikelets in pairs from the same joint of the *rachis*, each with 2—4 fertile florets. *Glumes* 2, collateral (both on one side of the spikelet), awnless. *Glumellas* 2, covering and usually incorporated with the *caryopsis*. —Name: ελυμος, given by the Greeks to the *Panic-grasses*, perhaps because they grew abundantly about *Elyma* in Greece. *Théis.*

1. E. *arenárius* L. (*upright Sea L.*); spike close erect, rachis flat but not winged, florets as long as the lanceolate downy glumes. *E. B.* t. 1672: *Parn. Gr.* t. 64.

Sandy sea-shores, frequent. ♃. 7. — *Root* much creeping in the loose soil; hence this grass becomes of great value, like the *Ammo-*

phila arenaria, for preserving a considerable extent of our own coasts and those of Holland from the encroachments of the sea. *Culms* 3—4 ft. high, glabrous. *Leaves* glaucous, involute, pungent. *Spike* 4—6 in. long. *Spikelets* of about 3 flowers on the rachis. *Glumes* 2, lanceolate, acuminate, downy. Outer *glumella* resembling them, but broader; inner bifid at the point, ciliated on the nerves or angles.

2. E. *geniculátus* Curt. (*pendulous Sea L.*); spike lax bent downwards, rachis winged, glumes subulate glabrous longer than the florets. *E. B.* t. 1586: *Parn. Gr.* t. 131.

Near Gravesend, in a salt marsh: very rare. 4. 7. — A most remarkable plant, apparently quite distinct from the preceding; yet we cannot but wish some one would study it in its locality, *Gravesend*, which is the only station recorded for it in this country: it is said to have been likewise found in Holland. We possess something very like it in a diseased state of *E. arenarius*, gathered in Scotland by *Mr. M'Nab.*

36. Hórdeum *Linn.* Barley. (Tab. VIII. f. 33.)

Spikelets in threes from the same joint of the *rachis*, 1—2 usually neuter or barren: *fertile* ones with a perfect floret and a rudimentary neuter one. *Glumes* 2, collateral, awned. *Glumellas* 2.—Name of dubious origin.

* *Lateral spikelets perfect, middle ones usually neuter (or imperfect?).*

1. H. *sylváticum* Huds. (*Lyme-grass* or *Wood B.*); all the glumes setaceous and scabrous (not ciliated), outer glumella of all the spikelets half the length of its awn. *Parn. Gr.* t. 130. Elymus Europæus L.: *E. B.* t. 1317.

Woods and thickets, especially in a chalky soil, apparently not rare in the midland and northern parts of England, but not found in Scotland. 4. 7, 8. — In former editions of this work reasons were given for uniting this to *Hordeum*, rather than to *Elymus*: we have therefore removed it, but have placed it in a separate section.

** *Lateral spikelets neuter, middle one perfect.*

2. H. *praténse* Huds. (*Meadow B.*); all the glumes setaceous and scabrous (not ciliated), outer glumella of the middle spikelets about as long as its awn, of the lateral ones with a short awn. *E. B.* t. 409: *Parn. Gr.* t. 11.

Moist meadows and pastures in England, frequent; rare in Scotland, as about Edinburgh and Ayr, but only occasionally, and perhaps introduced. ⊙. 6, 7.

3. H. *murínum* L. (*Wall B.*); glumes of the middle spikelet linear-lanceolate ciliated, of the lateral ones setaceous scabrous, outer glumellas of all the spikelets shorter than their awns. *E. B.* t. 1971: *Parn. Gr.* t. 10.

Waste grounds, by walls and road-sides; common in England, rare in Scotland. About Edinburgh, and at Elgin, which seems its most northerly range. ⊙. 6, 7.

4. H. *marítimum* With. (*Sea-side B.*); inner glume of the lateral spikelets semi-ovate, the rest setaceous, all scabrous (not ciliated), awn of the outer glumella in the middle spikelet longer than those of its glumes, in the lateral ones half as long. *E. B.* t. 1205: *Parn. Gr.* t. 10.

Light dry pastures and sandy ground near the sea, not rare in England. Rare in Scotland, and principally found in Angusshire. ⊙. 6. — All our British grasses of this genus are admirably characterized by the form, &c. of their *glumes*. The present is the smallest species, procumbent at the base and glaucous.

37. Tríticum *Linn.* Wheat, *or* Wheat-grass. (Tab. VIII. f. 34.)

Spikelets solitary, transverse, the sides (not the backs) of the glumes and florets directed to the rachis, compressed, many-flowered. *Glumes* 2, opposite, nearly equal, both with 3 or more nerves or ribs. *Glumellas* 2, lanceolate, outer one acuminate or awned at the summit, inner bifid at the point, minutely ciliated on the ribs. *Caryopsis* free.—There are two natural groups in this genus: 1st, the large annual species foreign to our country, which are cultivated so extensively as *Bread-corn;* and, 2ndly, the smaller perennial species, many of which are natives with us. These some authors look upon as 2 distinct genera, *Triticum* and *Agropyrum* (*Beauv. Lindl.*) We have only the latter genus or group in Britain.—Name: *Triticum*, "quod *tritum* est e spicis;" because it is thrashed or beaten from the spikes.

1. T. **cristátum* Schreb. (*crested W.*); spike short with closely imbricated 3—5-flowered spikelets, glumes subulate with a terminal awn 6-nerved, outer glumellas 5-nerved with an awn as long as themselves, rachis of the spike and spikelets slightly downy, leaves hairy on their upper surface, culm rough. *E. B.* t. 2267: *Parn. Gr.* t. 61.

"On steep banks and rocks by the sea-side between Arbroath and Montrose:" *G. Don*, who alone has found it. 4. 7. — A plant almost peculiar to the east of Europe and Asia, rarely occurring (and perhaps only when introduced) in the south of Europe, not, we believe, a native of France, and which could not have been indigenous to the station assigned above. On one side of the midrib (or that which runs into the awn) of the glumes there are 2, on the other 3 ribs. It somewhat resembles *Hordeum maritimum*, but is at once distinguished by the solitary several-flowered spikelets.

2. T. *júnceum* L. (*rushy Sea W.*); glaucous spikelets distant 4—6-flowered, glumes obtuse many-ribbed, outer glumella obtuse or slightly mucronulate 5-nerved, keel and mucro of glumes

and glumellas smooth, rachis of the spike smooth, in fruit brittle at the nodes, leaves involute pungent downy above with numerous soft very short spreading hairs on each rib, root creeping. —*α.* rachis of the spike smooth, of the spikelets smooth or slightly downy especially on the angles. *E. B.* t. 814; *Parn. Gr.* t. 63. —*β.* rachis of the spike slightly toothed at the angles, of the spikelets somewhat downy.

Sandy sea-shores, frequent. —*β.* Vazon Bay, Guernsey; and S. Brélade, Jersey. ♃. 7, 8. —Whole plant glaucous, rigid, 1½—3 ft. high. *Spike* long. *Spikelets* oblong, much compressed, distant in *α.* approximate in *β.* but never imbricated. *Glumes* oblong-lanceolate, often 3-toothed at the summit, oblique, usually 6-ribbed; the midrib, which is the longest, and sometimes forms a small apiculus, is not in the centre, but has always more ribs or nerves on one side than on the other; often there are 1 on the one side and 4 on the other, sometimes 2 on the one side and 3 on the other; besides these principal ribs, there are usually intermediate smaller ones at the base, which disappear about the middle. Outer *glumellas* similar to the glumes but equal-sided, all or the upper ones with a blunt mucro formed by the excurrent midrib.

3. T. *laxum* Fries (*flat-leaved Sea W.*): glaucous, spikelets often approximate 5—8-flowered, glumes obtuse or mucronate about 7-ribbed, outer glumella obtuse apiculate 5-nerved, keel and mucro of glumes and glumellas smooth, rachis of the spike smooth or minutely toothed on the angles "tenacious," leaves usually flat scabrous above with many acute points on each rib involute when dry, root more or less creeping. T. junceum *β. Br. Fl. ed.* 6.

Sandy sea-shores, not uncommon. ♃. 6, 8. —We admit this as a species with great hesitation, and chiefly to induce more observations to be made upon it. It seems to have been long known in this country, and to have been considered by most collectors as a form of *T. repens* with blunt glumes, but by others as *T. junceum* with flat leaves: abroad it appears to have been referred sometimes to the same, sometimes to *T. glaucum*, *obtusiflorum*, *pungens*, or *rigidum*, but in all of which the rachis of the spike is hispid or scabrous. In *T. junceum* the leaves are always involute and pungent at the point: when unrolled the ribs are seen covered with close-set soft down composed of numerous short hairs pointing obliquely and reaching to the similar hairs on the adjacent rib, thus forming a cover to the striæ between the ribs In *T. laxum* these hairs are reduced to mere points arranged on the ribs almost in the same manner, but from their shortness cause the leaves to be scabrous to the touch. The leaves are usually flat, but Mr. Baker observes that they are involute when the plant grows in dry sand. In both species the rachis of the spike is smooth or slightly rough at the angles, while that of the spikelets is either smooth or slightly downy. Mr. Babington says the outer glumellas of *T. junceum* are obtuse, of *T. laxum* apiculate. Now, in all the specimens of *T. junceum* before us, the midrib forms, particularly in the upper florets, a much

longer mucro than in *T. laxum*: the mucro or apiculus is blunt in both. The rachis of *T. laxum* is said not to be brittle at the nodes as in seed-bearing plants of *T. junceum*; but our specimens are only in flower, in which state we find no difference. Both produce decumbent barren leafy shoots. It appears to us, then, that the two differ only by *comparative* characters, and by none which are positive or structural.

4. T. *répens* L. (*creeping W.*, or *Couch-grass*); spike elongated, spikelets 4—8-flowered, glumes acuminate awned or awnless 5—7-ribbed, outer glumella acuminate or with an awn scarcely ever so long as the glumella 5-nerved, keel or awn of the glumes and glumellas scabrous, rachis of the spikelets scabrous, leaves plane or involute at the edge, with a single row of hairs or points on the ribs in the upper side, root creeping.—*α.* green, rachis of the spike glabrous or downy rough with ascending short bristles on the angles, leaves flat. *E. B.* t. 909: *Parn. Gr.* tt. 62, 63.—*β.* glaucous, rachis of the spike nearly quite smooth, leaves more or less involute at the edges. T. littorale *Host.*

Fields and waste places everywhere. — *β.* near the sea. ☉. 6—8. —In habit between the preceding and the following species. In *α.* there are numerous hairs on the nerves of the leaves, but mixed with points which are abortive hairs; in *β.* the hairs are few, and are sometimes all abortive. Var. *β.* must be carefully distinguished from *T. laxum*, and is best known by the acute, or (in this country we believe always) awned florets. The common variety is the pest of cornfields, being difficult to be extirpated, on account of its long creeping roots.

5. T. *canínum* Huds. (*fibrous-rooted W.*); spike elongated, spikelets approximate 2—5-flowered, glumes 3—4-ribbed, and as well as the 5-ribbed outer glumella acuminate awned, rachis of the spike hispid on the angles, of the spikelets harshly downy, leaves flat, root fibrous (perennial).—*α.* spikelets 4—5-flowered, awn of the florets usually longer than its glumella, leaves rough on both sides. *E. B.* t. 1372: *Parn. Gr.* t. 62.—Elymus *L.*—*β.* spikelets 2—4-flowered, awn of the florets 3 (or more) times shorter than its glumella, leaves glabrous except on the margin. T. biflorum *Mitten* in *Lond. Journ. Bot.* vii. p. 532 (scarcely of *Brignoli*). T. alpinum *Don.*

Woods and banks, frequent.—*β.* Ben Lawers; *G. Don.* ♃. 7. — Best distinguished from the last by its fibrous roots. The glumes have only 3 principal nerves or ribs, but occasionally a smaller and shorter one may be seen on the side between the lateral nerve and the midrib. Such specimens as we have examined of Don's *T. alpinum*, are indistinguishable from *T. caninum*, except by the above characters and these are obviously owing to its being found in an elevated situation. What the *T. biflorum* of Brignoli really is, we do not know, further than that he discribes it with an annual root, and constantly 2-flowered spikelets, and that he never found more than one tuft of it.

38. Brachypódium *Beauv.* False Brome-grass. (Tab. VIII. f. 35.)

Spikelets solitary, transverse to the rachis, alternate, remote, linear, cylindrical-compressed, many-flowered. *Glumes* 2, opposite, unequal, shorter than the contiguous lowest floret. *Glumellas* 2, rounded on the back, 7-ribbed, setigerous or awned at the extremity; inner one retuse, coarsely fringed on the ribs above. — Named from βραχυς, *short*, and πους, a *foot*; from the sessile or nearly sessile spikelet. This genus holds an intermediate place between *Bromus* and *Triticum*: from the former it differs by the sessile spikelets, and the terminal awn; from the latter, by the unequal glumes, long, almost cylindrical or only slightly compressed spikelets, and inner glumellas coarsely fringed on the ribs above the middle.

1. B. *sylváticum* Beauv. (*slender F.*); spike drooping, spikelets solitary nearly cylindrical secund, awns of the upper florets longer than their glumellas, leaves flat flaccid, root fibrous. Festuca *E. Fl.* v. i. p. 149. Bromus *Poll.*: *E. B.* t. 729. Triticum *Mœnch*: *Parn. Gr.* t. 61.

Woods and hedges, not unfrequent. ♃. 6, 7. — *Culms* 2 feet high. *Leaves* broadly linear-lanceolate, hairy on the upper surface. *Glumes* unequal, lanceolate-acuminate, about 7-nerved. Outer *glumella* linear-lanceolate, about 7-nerved, scabrous or sometimes hairy; inner one truncate, the two green ribs or folds strongly ciliated on the upper half.

2. B. *pinnátum* Beauv. (*Heath F.*); spike erect, spikelets nearly cylindrical distichous hairy, awns of the upper florets shorter than their glumellas, leaves rigid, root creeping. — *α.* leaves flat. Festuca *E. Fl.* v. i. p. 150. Bromus *L.*: *E. B.* t. 730. Triticum *Parn. Gr.* tt. 132, 133, 136, 137. — *β.* leaves involute. *Parn. Gr.* t. 134.

Open fields and heathy places, on chalky soil, in Yorkshire, Cumberland, Oxfordshire, Leicester, Worcester, Gloucester, Somerset, Bedford, Cambridge, Suffolk, Norfolk Essex, Kent, Sussex, Dorset, and perhaps several other counties. — *β.* near Bath. ♃. 7. — A very graceful plant. A monstrosity sometimes occurs with a tuft of spikelets at the same point of the rachis. (*Parn. Gr.* t. 135.)

39. Lólium *Linn.* Darnel, Rye-grass. (Tab. VIII. f. 36.)

Spikelets solitary, compressed, approximate, placed edgewise to the rachis, alternate, with 3 or more perfect florets. *Glumes* solitary, or 2 and the one next the rachis small; lower one with several nerves, about as long or longer than the lowest contiguous floret. *Glumellas* 2, outer one awnless or awned. — Name: "quasi *dolium*, δολιον, quod dolosum sit vel adulterinum. Fit enim e corruptis Tritici ac Hordei seminibus."

The ancients as well as the moderns attributed poisonous qualities to the *L. temulentum;* and even now it is erroneously believed in some countries that the *Wheat* changes into *Darnel.*

1. L. *perénne* L. (*perennial or beardless R.*); spikelets 6—8-flowered, glume solitary scarcely longer than the lowest floret, florets lanceolate awnless or nearly so, root producing leafy barren shoots. *E. B.* t. 315: *Parn. Gr.* t. 65.

Way-sides, pastures, and waste places, frequent. ♃ or ♂. 6, 7. — *Culms* 1—2 feet high. *Spike* with the general aspect of *Triticum repens*, sometimes, from luxuriance when cultivated, compound. *Florets* linear-oblong, nerved. What is supposed to be a variety is found by Mr. H. C. Watson, at East Moulsey, with awns as long as in the following, and this is probably Mr. Babington's var. *aristatum;* but if the two species are not to be characterized by the awn, we fear they must be conjoined. The root, which is perennial in the wild plant, ceases, as is well known to every agriculturist, to be so in particular situations, and becomes biennial even when the greatest care has been taken to obtain the seed from genuine perennial plants. Some foreign botanists and Mr. Babington allow that both have awned spikelets and say they differ by *L. perenne* having the young leaves simply folded, the other with their margins involute. If such be the only distinction, it is surely a most subtle and uncertain one, and they had better be conjoined, as proposed by Bartoloni and Dr. Parnell.

2. L. **multiflórum* Lam. (*bearded R.*); spikelets 6—14-flowered, glume solitary scarcely so long as the lowest floret, florets lanceolate awned, roots producing leafy barren shoots. L. Italicum *A. Braun.* L. perenne *var. Parn. Gr.* tt. 138, 139, 140, 141.

Many parts of England and Scotland, but apparently only near places where it had been cultivated. ♃ or ♂, sometimes ☉. 6. — We consider the *perennial* form of this species to be the wild one, the root having, like the preceding species, become biennial or even annual by over-cultivation. Like it, too, when once degenerated, the seeds never again produce a perennial root.

3. L. **linícola* Sonder (*annual or Flax R.*); spikelets oblong or ovate 7—11-flowered, glume solitary reaching to the middle (or further) of the spikelet, florets shortly awned or awnless elliptical in fruit tumid, root annual without barren leafy shoots. — *Mitten* in *Lond. Journ. Bot.* vii. p. 531: *E. B. S.* t. 2955.

On cultivated land, amongst various crops, about Hurstpierrepoint, Sussex; field near Catterick Bridge, Yorkshire. ☉. 7. — With this we are not well acquainted, and authentic specimens appear to have been equally unknown to Kunth. It seems to be truly annual, and scarcely to differ from the next.

4. L. *temulèntum* L. (*Darnel*); spikelets about 6-flowered

equal to or shorter than the glume, florets awned or awnless elliptical in fruit tumid, root annual without barren shoots. — *α.* florets with rigid awns about as long as or longer than the glumella. *E. B.* t. 1124: *Parn. Gr.* tt. 64, 142. — *β.* florets with soft imperfect awns or awnless. L. arvense *With.*: *E. B.* t. 1125.

Corn-fields, not common in Scotland. ☉. 7. — The true natural distinction between this and *L. perenne* does not lie in the proportionate length of glumes and spikelets which varies in both, but in the root without barren shoots, and in the tumid florets. The seeds, mixed with wheat and made into bread, have proved highly injurious. The *L. arvense* of Withering can only be considered a var. of the present, with an imperfect awn.

40. Leptúrus *Brown.* Hard-grass. (Tab. VIII. f. 37.)[1]

Spike terete, solitary, separating at the joints. *Spikelets* solitary in each joint, imbedded in cavities alternately on opposite sides of the rachis and placed edgewise to it, with 1 (or 2) fertile florets and a superior minute rudimentary (sometimes obsolete) neuter one. *Glumes* (1 or) 2, collateral, on the opposite side from the rachis and covering the floret, cartilaginous, several-nerved. *Glumellas* of the fertile floret 2, scarious, awnless. — Name from λεπτος, *slender*, and ουρα, a *tail*; in allusion to the slender spikes.

1. L. *incurvátus* Trin. (*Sea H.*); spike subulate, glumes 2. — *α.* spike curved. Rottbœllia *L.*: *E. B.* t. 760: *Parn. Gr.* t. 2. — *β.* spike filiform nearly or quite erect. L. filiformis *Trin.* Rottbœllia *Roth.* R. incurv. *var.* filiformis *Hook.*: *Parn. Gr.* t. 3.

Sea-shores, but not common. Frequent on the Irish coast. — *β.* many places along the coast of England. Rare in Scotland, as near Aberlady. ☉. 7. — *Plant* from 2—6 or 8 inches high, more or less curved, especially in the curious spike, but never so much so on our coast as on the shores of the Mediterranean, our usual plant being in that respect intermediate between the genuine *L. incurvatus* and *L. filiformis* of authors. We have, however, collected specimens at Hull, with the spikes quite erect and slender.

41. Knappia *Smith.* Knappia. (Tab. IX. f. 39.)

Spikelets very shortly stalked, solitary, arranged on two sides of the simple rachis and forming a simple unilateral spike-like

[1] Although for aiding the student we describe the spikelets as solitary with 2 glumes, this is not the case, the spikelets being actually in pairs in *Lepturus* (*Diplerma*) *incurvatus* and *filiformis*; the fertile one is sessile, having a single glume; the other which is pedicellate, is reduced to the mere pedicel resembling the glume of the sessile spikelet and is usually described as a second glume belonging to it. In the true species of *Lepturus* there is only one spikelet at each joint, and it is sessile and with one glume.

raceme, 1 flowered, awnless. *Glumes* 2, opposite, truncate, nearly equal, rather longer than the floret, membranous, 1-nerved. Outer *glumella* hairy, membranaceous, jagged; inner narrower, sometimes wanting. *Styles* distinct. *Stigmas* filiform. —Named in honour of *Mr. Knapp*, an English botanist, author of a work on British grasses.

1. K. *agrostidéa* Sm. (*early K.*). *E. B.* t. 1127: *Parn. Gr.* t. 73. Agrostis minima *L.*

Sandy pastures by the sea, rare. Essex, near the mouth of the Thames. Wales, and S. W. coast of Anglesea, frequent. Jersey. ⊙. 3, 4. — A beautiful and minute grass, of which only a solitary species is known. *Root* fibrous. *Stems* several from the same root. *Leaves* short, linear, rough, equalling in length their white inflated *sheaths*. *Glumes* 2, dorsally compressed, truncated, purplish. *Glumellas* sometimes 2, white, delicate, very hairy, jagged, the outer one much the largest and embracing the inner, which last is often wanting.

** *Spikelets (with one perfect flower) arranged only on one side of the partial rachis and forming a racemose or digitate compound spike or raceme.* (Tab. IX. f. 42. *g.*) (Gen. 42—44.)

42. Spartína *Willd.* Cord-grass. (Tab. VIII. f. 38.)

Spike compound. *Partial spikes* erect, racemose. *Spikelets* sessile, awnless, arranged alternately in two rows on one side of the *partial rachis*, laterally compressed, with one *fertile* and scarcely any rudiments of a *neuter floret*. *Glumes* 2, very unequal, lanceolate, compressed. *Glumellas* 2, compressed, lanceolate, acuminate. *Styles* united half-way up. *Stigmas* elongated.—Ligules *very short*.—Name derived from its similarity to the *Lygeum Spartum*, or *Bastard mat-weed*, and that from σπαρτον, sometimes applied to a *broom*, sometimes to other plants, of which the bark, branches, and leaves are tough and made into cords, ropes, &c., called still in France, *spartes*. *Esparto* is a name given at the present day to *Stipa tenacissima* by the Spaniards.

1. S. *stricta* Sm. (*twin-spiked C.*); partial spikes 2—3, larger glume and outer glumella 1-nerved hairy, rachis scarcely produced beyond the terminal spikelet of each partial spike, leaves shorter than the spikes tapering at the base articulated upon the sheath lower ones deciduous. *Parn. Gr.* t. 74. Dactylis stricta *E. B.* t. 380.

Muddy salt-marshes, on the east and south-east coasts of England. 2. 8. — A remarkably stiff rigid plant. *Stems* 6—8 inches, or a foot and more high. *Culms* concealed by the sheathing bases of the short pungent involute *leaves*. Inner *glumella* longer than the larger *glume*, which is a third longer than the smaller one.

3. S. *alterniflóra* Loisel. (*many-spiked C.*); partial spikes numerous, larger glume 5-nerved fringed with a few distant short bristly hairs on the keel otherwise glabrous, outer glumella 3-nerved glabrous slightly toothed on the keel above, rachis much produced beyond the spikelets with a flexuose awn-like point, leaves equal to or longer than the spikes dilated at the base continuous with the sheath and all persistent. *E. B. S.* t. 2812: *Parn. Gr.* t. 75. S. glabra *Muhl.* S. lævigata *Link.*

Itchin Ferry, Southampton. ♃. 8. — Inner *glumella* longer than the outer one, but shorter than the larger *glume*, which is 2—3 times longer than the smaller one. Much taller than the preceding.

43. Cynodon *Rich.* Dog's-tooth-grass. (Tab. IX. f. 40.)

Spike compound. *Partial spikes* spreading, digitate or racemose. *Spikelets* almost sessile, awnless, arranged in a single row on one side of the *partial rachis*, laterally compressed, with one fertile and a rudimentary neuter floret. *Glumes* 2, nearly equal, spreading. *Glumellas* 2, compressed, outer one boat-shaped, at length hardened and inclosing the *caryopsis*. *Styles* distinct. *Stigmas* oval.—*Ligules* none, except a tuft of hairs. —Named from κυων, a dog, and οδους, a tooth.

1. C. *Dáctylon* Pers. (*creeping D*); partial spikes 3—5 digitate, outer glumella longer than the glumes, glabrous on the sides somewhat ciliated on the keel and margins, leaves downy beneath, stem creeping at the base. *E. B.* t. 850: *Parn. Gr.* t. 72.

On the sandy sea-shore, rare. Cornwall, near Penzance; Studland, Dorset; Devonshire. ♃. 7, 8. — *Culms* 4—6 inches high. *Leaves* on the barren shoots flat and spreading, on the stems usually folded. *Ligule* a tuft of a few hairs. *Spikelets* purplish. *Neuter floret* at the base of the inner *glumella*, a mere beardless bristle thickened at the end, more than half the length of the glumellas.

44. Digitária. *Scop.* Finger-grass. (Tab. IX. f. 41.)

Spikes compound. *Partial spikes* somewhat digitate. *Spikelets* in pairs on short unequal pedicels, arranged on one side of the *partial rachis*, awnless, flat in front, rounded on the back, with one perfect flower, and one barren or neuter in front. *Glumes* 2, lower one much smaller or obsolete. *Barren* or *neuter* floret as large as the fertile one, with 1—2 glumellas; outer *glumella* resembling the upper glume. Outer *glumella* of the *upper* or *fertile* floret convex, embracing the inner one, at length hardened and enclosing the *caryopsis*. *Styles* 2, distinct. —Named from *digitus*, a *finger*.

1. D. **sanguinális* Scop. (*hairy F.*); culm creeping at the base, sheaths tuberculate and leaves hairy, stipules membranaceous,

partial spikes 3—5 digitate or closely corymbose naked spreading, partial rachis flexuose serrulate on the margin, spikelets oblong-lanceolate slightly imbricated, lower glume minute ovate acute nerveless, upper lanceolate about half as long and broad as the floret 3-nerved almost glabrous, neuter glumella 5-nerved glabrous or slightly pubescent on the margin. *Parn. Gr.* t. 70. Panicum *L.: E. B.* t. 849.

Rare, in sandy cultivated fields; it formerly grew in Battersea fields, near London. Other habitats, given in the British Floras for this species, belong, in Mr. Borrer's opinion, to the next. ⊙. 7, 8. — From a span to a foot high, branched at the base, erect, or ascending. *Leaves* and *sheaths* hairy, the latter with small tubercles from which the hairs spring. *Spikes* 3—5, digitate. *Spikelets* secund, 2 together, appressed to the flattened rachis.

2. D. **humifúsa* Pers. (*glabrous F.*); culms depressed, sheaths and leaves glabrous, stipules membranaceous, partial spikes 2—4 somewhat digitate naked spreading, partial rachis nearly straight minutely serrulate on the margin, spikelets oblong somewhat separate, lower glume very minute truncate embracing the spikelet or (usually) wanting, upper glume oblong 3-nerved pubescent nearly as long as the fertile floret, glumella of the neuter floret 5-nerved pubescent. *E. B. S.* t. 2613: *Parn. Gr.* t. 71. Syntherisma glabrum *Schrad.* Panicum *Gaud.: Trin.*

Rare. On loose sand at Weybridge, Surrey; Ipswich; Norfolk; Suffolk; Sussex; and Yorkshire. ⊙. 7, 8. — Generally smaller and more depressed than the preceding, of a purpler hue. *Leaves* and *sheaths* quite glabrous. Partial *spikes* usually fewer. *Spikelets* more ovate and more convex on the back. *Neuter glumella* purplish. *Richard* in *Pers. Syn.* appears to have been the first to discriminate this as a species; and Schrader has admirably described and figured the flower.

CLASS III.

ACOTYLEDONOUS,[1] OR CELLULAR, PLANTS.

Whole plant with a cellular structure (except in the true Ferns, which have tubular vessels among the cells, and hence approach the 2nd Class). There are no real

[1] From ἀ, *without*, and κοτυληδων, a *cotyledon*.

flowers, nothing that can be considered as Stamen and Pistil. The Seeds, or organs of reproduction, are without any distinct embryo, consequently without any cotyledon.—This Class corresponds with the 24th, CRYPTOGAMIA in the Linnæan System.

SUB-CLASS I. FILICES[1] *Linn.* (ORD. CVIII—CXIII.) (Tab. IX. f. 1—4, X. XI.)

Fructification generally of one, but sometimes of two kinds, consisting of *seeds*, or *sporules*, included in *capsules*, *thecæ*, or *sporangia*, sometimes surrounded with an elastic ring, and these either naked or covered by a membrane, *indusium* or *involucre;* generally collected into clusters (*sori*), or spikes, situated at the back of the fronds, or marginal, terminal, axillary, or radical. —*Perennial* plants, *of varied structure, bearing fructification during a great part of the year. In most, as in the true Ferns, the* leaves *are connate with the stem, so as to constitute fronds; in others, the* leaves *are distinct, as in* LYCOPODIUM, *which in general appearance comes nearest to the Mosses.*

CONSPECTUS OF THE ORDERS.

108. POLYPODIACEÆ. Capsules dorsal or marginal, surrounded by a ring, reticulated and pellucid, opening transversely and irregularly. Fronds circinate in æstivation. Tab. ix. 1—4. and Tab. xi. f. 1.
109. OSMUNDACEÆ. Capsules clustered on the margin of a transformed frond, with an obscure ring, reticulated and pellucid, opening by two regular valves. Fronds circinate in æstivation. Tab. xi. f. 2.
110. OPHIOGLOSSACEÆ. Capsules arranged on the margin of a contracted frond, sessile, without reticulation or a ring, coriaceous, opaque. Fronds straight in æstivation. Tab. xi. f. 3, 4.
111. LYCOPODIACEÆ. Fructifications sessile in the axils of leaves or bracteas, capsules without a ring, 2—3-valved. Æstivation straight. Tab. xii. f. 1.

[1] The *Filices* are here considered as a Subclass, and include the true *Ferns*, or *Polypodiaceæ* — no less readily distinguished by their general appearance than by the presence of an elastic ring to the capsule (Tab. ix. f. 1—4. Tab. x. and Tab. xi. f. 1.). — the *Osmundaceæ* (Tab. xi. f. 2.), the *Ophioglossaceæ* (Tab. xi. f. 4.), the *Lycopodiaceæ* (Tab. xii. f. 1.), *Marsileaceæ* (Tab. xii. f. 2, 3.), and *Equisetaceæ* (Tab. xii. f. 4.); groups or Orders which are very distinct one from another and easily recognized, and hence we have given brief, but we trust sufficient characters of them. However difficult the study of the Cryptogamia, or Acotyledonous plants in general, may be considered by the novice in botany, he will find with the assistance of the figures here given, and the characters of the orders and genera, that the difficulties are as easily mastered as those attending the investigation of the flowering plants.

112. Marsileaceæ. Capsules without a ring within involucres that are situated near the root of the plant. Tab. xii. f. 2, 3.

113. Equisetaceæ. Fructifications terminal in spikes or catkins, consisting of peltate polygonous scales, on the under-side of which are from 4—7 involucres, which open longitudinally, and contain numerous globose bodies enfolded by 4 filaments, clavate at their extremities. Tab. xii. f. 4.

Ord. CVIII. POLYPODIACEÆ *R. Br.* (Tab. IX. f. 1—4, X. and XI. f. 1.)

Capsules dorsal or marginal, surrounded by a ring, reticulated and pellucid, opening transversely and irregularly. *Fronds* circinate in æstivation.

A. Capsules opening transversely, placed on the back of the frond, but sometimes close to its margin; their ring vertical, usually incomplete.

* *Sori neither furnished with an involucre nor covered by the reflexed margin of the frond.*

1. Ceterach. Sori linear, on reticulated veins, covered with chaffy scales. Tab. ix. f. 1.
2. Gymnogramme. Sori linear, on forked veins, naked.
3. Polypodium. Sori roundish. Veins simple or forked (in British species). Tab. ix. f. 2.

** *Sori with an involucre, or covered by the reflexed margin of the frond.*

† *Sori roundish. Involucres placed upon the back of the lateral veins.*

4. Woodsia. Sori roundish. Involucre below the sori, more or less cut at the margin. Veins forked. Tab. ix. f. 3.
5. Aspidium. Sori roundish. Involucre above the sori, orbicular (*Polystichum*) or reniform (*Lastrea*). (Veins forked in British species). Tab. ix. f. 4.
6. Cystopteris. Sori roundish. Involucre acuminate, cucullate at the base, attached below. Sorus on one side. Tab. x. f. 1.

†† *Sori oblong or linear. Involucres attached by the one side to the lateral veins, opening at the other.*

7. Asplenium. Sori elongated (*Asplenium*) or oblong-reniform (*Athyrium*), arising from lateral veins, opening towards the midrib. (Veins forked in British species). Tab. x. f. 2.
8. Scolopendrium. Sori elongated, straight. Involucre double, the two portions opening towards each other. Tab. x. f. 3.

††† *Sori marginal or parallel to the midrib, covered either by an involucre or by the reflexed margin of the frond.*

9. Pteris. Sori continuous, at the margin of the frond. Involucre consisting of the reflexed margins. Tab. x. f. 4.
10. Cryptogramma. Sori roundish at the margin of the frond, at length confluent and covered by the recurved margins meeting in the middle. Tab. x. f. 5.

11. Blechnum. Sori linear, parallel on each side of the midrib, distant from the margin. Tab. x. f. 6.
12. Adiantum. Sori oblong or roundish marginal. Involucres formed of the reflexed margins or lobes of the frond, and bearing the capsules. Tab. x. f. 7.

B. *Capsules opening irregularly, placed on a receptacle at the margin of the frond and terminating a vein; their ring horizontal.*

13. Trichomanes. Sori marginal. Involucre monophyllous, subcylindrical, surrounding a much elongated receptacle bearing the capsules. Tab. x. f. 8.
14. Hymenophyllum. Sori marginal. Involucre monophyllous, 2-valved, including an elongated receptacle bearing the capsules. Tab. xi. f. 1.

A. *Capsules opening transversely, placed on the back of the frond but sometimes close to its margin; their ring vertical, usually incomplete. Cellular tissue of the frond compact.*[1] Polypodieæ. (Gen. 1—11.)

1. Céterach *Willd.* Ceterach. (Tab. IX. f. 1.)

Sori oblong or linear straight, scattered, arising from reticulated veins, covered (as is the whole back of the frond) with chaffy scales. *Involucre* none (or obsolete).—Name: from the Celtic *cedor wrach*, double rake; in modern Gaelic also *ceither* is *four*, and *rac rake*.

1. C. *officinárum* Willd. (*common C.*); fronds pinnatifid covered beneath with imbricated chaffy scales, segments ovate obtuse, scales entire. Grammitis Ceterach *Sw.* Scolopendrium *E. B.* t. 1244. Asplenium *L.*

Rocks and walls, most abundant in limestone countries, and the south of England and Ireland. Rare in Scotland; near Perth, Paisley and Glasgow; walls about Drumlanrig, Dumfriesshire; Kilfinnan, Argyleshire. — *Mr. W. Wilson* finds evident traces of an involucre on the lower side of the sorous, viz. "a narrow membrane, fringed with the same chaffy scales which cover the back of the frond;" and the same is figured in Bauer and Hooker's Genera of Ferns, p. 113. a.

2. Gymnográmme *Desv.* Gymnogramme.

Sori oblong or linear on forked free veins, not covered with

[1] The compactness of the tissue arises, not only from the small size of the cellules, but also from there being several in the thickness of the frond, giving it a certain degree of opacity: in the next group (B.), the cellular tissue is lax and almost transparent, from the larger size of the cellules, and there being often only one in the thickness of the frond, in this respect resembling the leaves of most *Mosses*, but differing from them by having the nerves and veins composed of that kind of vascular tissue called ducts, to which it were well to restrict the term *angienchyma*.

scales. *Involucre* none.—Name: from γυμνος, *naked*, and γραμμη, a *line*.

1. G. *leptophýlla* Desv. (*slender G.*); slender fragile, fronds ovate or oblong thin membranaceous bitripinnate, pinnæ obovato-cuneate bitrifid or lobed, lobes obtuse, sori often confluent, rachis dark brown glossy, winged above, root fibrous annual. *Hook. and Grev. Ic. Fil.*, t. 25. *Newm. Br. Ferns.* ed. 3., p. 11., with a woodcut. Polypodíum? L.

Moist banks in Jersey, frequently in company with *Marchantia*, discovered there by a lady, according to Mr. Newman. In March, 1854, we received specimens from Mr. Piquet, of St. Helier's, who has detected several stations in the same island.—We should be disposed to consider it one of the most widely diffused Ferns over the globe, were it not that there is no notice of it in Ledebour's Flora of the vast Empire of Russia, and none in Koch's Flora Germanica. It is wanting also in the United States, though we have received it from Mexico; and common as it is about what may be termed the basin of the Mediterranean, it is much more universally diffused in the southern hemisphere. In the Channel Islands it has probably reached its northern limits. Even in France, Britanny and Provence are the only localities recorded in Wood's Tourist's Flora, the former of which countries brings it very near to us. Our Herbarium possesses specimens from the extreme north and extreme south of Africa, Abyssinia; from the East Indies, Himalaya and the Nielgherries; from Australia, Eastern, Southern and Western; from New Zealand and Van Diemen's Land. Mr. Piquet remarks that the plant is truly annual, the root and fronds dying away entirely in May, and springing again from seed in the Autumn. Height of the plant from 2 to 4, or rarely 6 inches.

3. Polypódium *Linn.* Polypody. (Tab. IX. f. 2.)

Sori roundish. *Involucre* 0. — Veins *simple or forked* (*in the British species*).—Named from πολυς, *many*, and πους, ποδος, a *foot*; from the numerous *roots*, or from the *segments* of the *fronds*.

1. P. *vulgáre* L. (*common P.*); fronds deeply pinnatifid, the segments linear-lanceolate obtuse crenulate approximate, upper ones gradually smaller. *E. B.* t. 1149.

Rocks, walls, trunks of trees, and banks, frequent. — The *lobes* are sometimes deeply serrate and even pinnatifid or laciniate, as it has been found in Ireland and Wales, when it becomes the *P. Cambricum* L.

2. P. *Phegópteris* L. (*pale mountain P.*); fronds bipinnatifid, the two lowermost pinnæ distinct pointing forward, their segments linear lanceolate obtuse entire ciliated the lowermost ones adnate-decurrent, veins hairy, sori marginal. *E. B.* t. 2224.

Shaded rocky places, in mountainous countries.

3. P. *Dryópteris* L. (*tender three-branched P.*); fronds ternate bipinnate thin and membranaceous glabrous, divisions spreading and deflexed, the segments obtuse subcrenate, sori marginal, root-stock filiform. *E. B.* t. 616.

Dry stony places, in mountainous countries. Common in Scotland.

4. P. *calcáreum* Sm. (*rigid three-branched P.*); fronds ternate bipinnate rather rigid subpubescent and always minutely glandular beneath, divisions sometimes spreading and deflexed, segments obtuse somewhat crenate, masses of capsules crowded finally confluent. *E. B.* t. 1525.

Matlock baths, and other parts of Derbyshire, in broken limestone ground. Cheddar Cliffs; Coldwell Rocks, Herefordshire; Ingleborough, &c. — Distinguished from the preceding by its thicker and more rigid texture, consequently more erect habit, its more pectinate subdivision, and by the minute pubescence covering the rachis and midrib of the pinnæ; but we consider it a very doubtful species.

5. P. *alpéstre* Hoppe (*Alpine P.*); glabrous, fronds oblong-lanceolate bipinnate, pinnules oblong-ovate sometimes slightly falcate subacute sessile membranaceous pinnatifid, segments more or less deep ovate inciso-serrate sometimes scarcely mucronate, secondary rachis and main rachis above winged, stipes with large scales. Aspidium alpestre, *Schkh. Fil.* p. 58. t. 62 (A. umbrosum *on the plate*) *excellent.* Pseudathyrium alpestre, *Newm. Brit. Ferns.* ed 2., p. 199, with wood-cut. Pseudathyrium flexile, *Newm.* l. c. p. 199., with wood-cut, p. 203. (state with the pinnules smaller and less decidedly pinnatifid).

Mountains of Invernessshire and Forfarshire; elevation from 2,000 to 4000 feet.—Detected and determined by Mr. Watson in July, 1841, but we believe it had been previously gathered and preserved in herbaria as *Asplenium Filix fœmina*, with which it is frequently found associated. It may hence be inferred, as is really the case, that it has great general similarity with that fern. The fructification, however, truly that of a *Polypodium*, will at once distinguish it. Mr. Backhouse's "Glen Prosen var.", which we have received from that gentleman, and which constitutes the *Pseudathyrium flexile* of Mr. Newman, is exactly intermediate between the ordinary or more perfectly developed form and the figure of *P. flexile* given by Mr. Newman, and indeed is identical with several of the specimens sent by Mr. Croall from the White Water, Clova, as a common state of the species.

4. Woódsia *Br.* Woodsia. (Tab. IX. f. 3.)

Sori scattered, roundish, having, beneath, an *involucre* which is cut at the edge into many, often capillary, segments. Named, in compliment to *Joseph Woods*, *Esq.*, author of an excellent "Monograph of the British Roses," "Tourist's Flora," &c.

1. W. *Ilvénsis* Br. (*oblong W.*); fronds lanceolate pinnate, pinnæ deeply pinnatifid with many oblong segments chaffy beneath and on the rachis and stipes. *Hook.* in *E. B. S.* t. 2616. Acrostichum *L.*

Mountains; very rare. Wales. Near Caldron spout, Teesdale. Hills to the north of Moffat; Clova mountains. — *Plant* small, 2—3 inches high.

2. W. *hyperbórea* Br. (*round-leaved W.*); fronds lanceolate pinnate, pinnæ ovate-cordate inciso-pinnatifid hairy beneath, sori solitary at length confluent. Polypodium *Sw.: E. B.* t. 2023.

On Snowdon; Caernarvonshire. Ben Lawers; near Crieff; Glen of the Dole, Clova. — About the same size as the preceding, but distinct, we believe, though of late we have seen specimens which it has been difficult to determine. Mr. Babington unites them.

5. Aspídium *Sw.* Shield-fern. (Tab. IX. f. 4.)

Sori roundish, scattered. *Involucre* above the sori orbicular, or reniform.—Veins *simple or forked in the British species.*—Name: *ασπις, ασπιδος*, a *shield*, which its *involucres* resemble, especially in the species of the first division.

* *Involucre orbicular, fixed by the centre, hence peltate.* Aspidium *Br.* Polystichum *Roth* (*in part*). (Tab. IX. f. 4. *a. b.*)

1. A. *Lonchítis* Sw. (*rough Alpine S.*); fronds rigid linear-lanceolate pinnate, pinnæ lanceolate-falcate acute ciliato-serrate, the upper base acutely auricled the lower one cuneate, superior pinnæ bearing the fructifications, stipes chaffy. Polypod. *L.: E. B.* t. 797.: Polystichum *Roth.*

Shady clefts of rocks and under stones, on the high mountains of Wales and Scotland. A very handsome northern fern.

2. A. *lobátum* Sw. (*close-leaved prickly S.*); fronds oblong-lanceolate bipinnate, pinnules rigid convex ovate sublunate acuminate aristate oblique and cuneate at the base and decurrent, the margins faintly serrate spinulose, with a distinct tooth at the base of the upper side, the one next the main rachis longer than the rest, stipes and rachis more or less chaffy, fructifications confined to the upper half of the fronds. *E. B.* t. 1563. *Polystichum aculeatum* Bab.—*β. lonchitidoides*; small, the pinnules combined so as to form only a pinnate frond. Filix lonchitidi affinis *Raii Syn* ed. 3., p. 121. A. aculeatum *β Sm.*

Moist woods, shady banks, and rocky places.

3. A. *aculeátum* Sw. (*soft prickly S.*); fronds broadly lanceolate bipinnate, pinnules subrigid somewhat convex slightly petioled ovate-sublunate acuminate or acute aristate obliquely

truncate and auricled at the base on the upper side, the one next the main rachis somewhat larger than the rest, the margins distinctly serrate and spinulose, stipes and rachis chaffy, fructifications copious. *E. B.* t. 1562 (bad). Polystichum *Roth.*

Woods and hedge-banks in England and Ireland; rare in Scotland.

4. A. *anguláre* Willd. (*angular-leaved S.*); fronds broadly lanceolate bipinnate, pinnules thin and membranaceous plane petioled ovate sublunate obtuse aristate obliquely truncate at the base with a large auricle on the upper side, the margins deeply serrate spinulose, the lowermost ones often deeply pinnatifid, that next the main rachis scarcely larger than the rest (excepting in var. β.), stipes and rachis very chaffy, fructifications copious. *Sm. E. Fl.* v. iv. p. 291; *E. B. S.* t. 2776. Polystichum *Newm.* A. aculeatum β. *Sm.: Fl. Br.* p. 1122. A. lobatum *Willd.?* — β. subtripinnate, pinnules, especially the lower ones and the much larger one next the main rachis, distinctly pinnate.

Woods and hedge-banks, frequent in England, as far north as Yorkshire. N. Wales. Pease Bridge, Berwickshire. Colin Glen, Belfast. — β. with the last.—This has generally been considered *A aculeatum* by British botanists, and has hence only been viewed in comparison with *A. lobatum* Sm., from which, at first sight, and in essential character, it certainly appears distinct; but after a most careful examination of numerous specimens, we are compelled to say that there is a third kind, the *A. aculeatum* of *E. Fl.*, which does partake of the characters of the other two, and which some botanists refer to *A. lobatum*, and others as confidently to *A. angulare.* Hence it appears to us they must all be united, or as done by Smith, they must constitute 3 species.

** *Involucre orbicular-reniform, fixed by the sinus.* Nephrodium *Rich.* (*in part*), *Br.* Lastrea *Bory, Presl.* (Tab. IX. f. 4. *c. d.*)

5. A. *Oreópteris* Sw. (*Heath S.*); fronds pinnate, pinnæ lanceolate pinnatifid glabrous resinose-glandulose beneath, the segments lanceolate obtuse entire, lowermost ones longer, sori marginal. Polypodium *Ehrh.: E. B.* t. 1019. Lastrea *Presl.*

Mountainous countries, in heaths and dry pastures. Abundant in Scotland. *Involucres* small, indistinct.

6. A. *Thelýpteris* Sw. (*Marsh S.*); fronds pinnate, pinnæ linear-lanceolate pinnatifid, and as well as the rachis, slightly pubescent, the segments ovate acute entire, sori marginal contiguous at length confluent. Polypodium *L.: E. B.* t. 1018. Lastrea *Presl.*

Marshy and boggy places. *Root* creeping.

7. A. *cristátum* Sw. (*crested S.*); fronds linear-lanceolate

pinnate, pinnæ cordate attenuated deeply pinnatifid scarcely again pinnate, segments oblong-ovate obtuse acutely and doubly serrate. *E. B.* t. 2125 (not t. 1949). Lastrea *Presl.* — *β. uliginosa*; Moore in Phytol. 4., p. 150.; fronds rather broader, pinnæ more deeply divided, especially those that have the most copious fructification. Lophodium uliginosum. *Newm. Br. Fern.* ed. 3., p. 163. (no figure).

Boggy heaths, very rare. Near Holt and Norwich, Norfolk. Westleton, Suffolk. Oxton Bogs, Notts. Fritton, near Yarmouth. — *β.* Oxton, Notts. *Mr. Lloyd* (from Mr. Moore).—A species most distinct from any of the following, even in the outline of its *frond*, which is narrowed below. Whatever other botanists and collectors may have called *Aspidium* (or *Lastrea*) *uliginosum*, we have no hesitation in considering the Oxton plant, communicated by Mr. Moore, a slight var. of *A. cristatum*, as Mr. Moore himself has done. He sends 2 states of "spring and summer fronds;" the latter state is entirely covered with sori, to its very lowest pinnæ, and is more deeply cut than the "spring" plant, which is really identical with many of the common forms of *A. cristatum*. All the forms are distinguished by the attenuated base of the frond, so as to give the whole frond a linear-lanceolate or very elongated character; the lower pinnæ short and very broad at the base. At Kew Gardens a var. of *A. spinulosum* has been received, under the name of *uliginosum*.

8. A. *Filix más* Sw. (*blunt S.*); fronds bipinnate, pinnules oblong obtuse serrate, sori near the central nerve, stipes and rachis chaffy. *E. B.* t. 1458 and t. 1949 (A. cristatum). Lastrea *Presl.*—*β. erosum*; pinnules less crowded more elongated and narrower inciso-dentate. A. erosum *Schkuhr Fil.* t. 45. Lastrea Filix mas *β.* incisa *H. Wats. in Herb. Hook.*

Woods and shady banks, frequent. — *β.* King's Cleft valley, near Bridgewater, Somerset; Mayford, Surrey. Near Glasgow; Kinrossshire. — A beautiful, though very common, fern. 3—4 feet high; its *fronds* growing in a circle. The var. *β.* has a peculiar aspect from the more distant and elongated pinnules, and is the *A. affine* of Fischer from the Caucasus and Lenkoran. Mr. Borrer finds a variety, common in Devonshire, with more copious and brighter-coloured scales on the stipes and rachis, and with a bright golden yellow tinge on the whole frond: the same has also been found in Yorkshire, various parts of Durham, and in Scotland.

9. A. *rígidum* Sw. (*rigid S.*); fronds lanceolate bipinnate, pinnules narrow-oblong obtuse slightly pinnatifid, the segments broad and rounded bi-tridentate (without spinulose points to the teeth), stipes and rachis chaffy, involucre persistent very convex reniform entire. *Hook. in E. B. S.* t. 2724. Lastrea *Presl.*

On Ingleborough, and Altermere rocks above Settle, Yorkshire; and on Wharnside, abundant. — *Frond* 1—2 feet long, pinnæ very numerous, closely set, of nearly the same width throughout (often widest in the middle), with numerous rounded 2—3-toothed lobes,

teeth broad and triangular. *Involucre* slightly glandular on the margin, with a reticulation quite unlike that of *A. spinulosum.* This plant differs from the following in having a *permanent* large convex and rounded involucre, resembling that of *A. F. mas*, covering the mass of capsules at every stage, with an attachment as truly central as that of *A. cristatum.* It agrees also with *F. mas* in the oblique insertion of the pinnæ on the rachis, so that they lie in very different planes; but it differs essentially in not having the lower pinnæ gradually diminished, the frond resembling in circumscription that of *A. cristatum.* In the shape of the pinnules and mode of toothing and subdivision it more resembles some states of *Asplenium Filix fœmina: Mr. Wilson;* to whom we are indebted for the specific character.

10. A. *spinulósum* Willd. (*prickly-toothed S.*); fronds bi-tripinnate, pinnules oblong distinct inciso-pinnatifid, segments mucronate-serrate, stipes chaffy, involucre toothed evanescent. A. dilatatum *Hook. Scot.* ii. p. 154.—*α.* fronds ovate or oblong, lower primary pinnæ sub-bipinnate. A. spinulosum *E. B.* t. 1460?: — *β.* fronds larger ovate, lower primary pinnæ bi-tripinnate, pinnules often convex above. A dilatatum *Willd.: E. B.* t. 1461. A dumetorum *Sm.* Polypodium dilatatum *Hoffm.* Lastrea *Presl.* Lophodium glandulosum. *Newm. Brit. Ferns*, 3., p. 154., *no figure* (frond glandular beneath). — *γ.* fronds triangular-ovate, pinnules generally concave above often minutely glandular. A. dilatatum var. recurvum *Bree.* Lastrea recurva *Newm.* L. Fœnisecii *Bab.* Nephrodium Fœnisecii *Lowe?* (*in part*). — *δ.* pinnules and segments very unequal in size and in their spinulose serratures (a monstrosity?).

Moist woods, Alder-cars and shady and rocky places, abundant. — *α.* most frequent in rocky and subalpine countries. — *β.* generally in moist woods. — *γ.* Ireland, very common. Cornwall, Sussex, Cumberland (*Bree*). Arran in Scotland. — *δ.* Bingley Wood, near Halifax; About Norwich. Glen Falloch, Scotland. — An extremely sportive plant[1], it must be confessed; but an attentive observer of nature will not find it difficult to trace the different states passing into each other, so that we cannot in our herbarium bring all our numerous specimens under the above forms. The texture of the *frond*, too, is highly variable. It is the most compound of all our British *Aspidia.* In stony places on the Scottish mountains, especially the Braedalbane and Cairngorm ranges, the *frond* is almost ovate, but with nearly parallel sides, the whole compact in its ramification and loaded with fructifications. We have a cultivated specimen from Mr. Moore of *Lophodium glandulosum* of Mr. Newman, from the Epping station, which we refer to our var. *β.* with little hesitation. The figure in E. Bot. t. 1260, belongs perhaps to our *γ.*

6 Cystópteris *Bernhardi.* Bladder-fern. (Tab. X. f. 1.)

Sori roundish. *Involucre* inserted, by its broad cucullate base, at the under-side of the *sorus*, opening by a free, generally

[1] We may refer to our last ed. p. 570, for observations on this species.

lengthened, extremity, which points towards the apex of the segment. — Veins *forked.* — Name: compounded of κυστις, a *bladder*, and πτερις, a *fern*.

1. C. *frágilis* Bernh. (*brittle B.*); fronds broad lanceolate bipinnate, pinnæ ovate or lanceolate variously toothed or laciniate or pinnatifid the segments more or less acute entire or again toothed, sori scattered more or less distant sometimes crowded and almost confluent, rachis winged. — *α. fragilis;* fronds decompound pale green, sori rather large generally crowded, involucres usually acuminate conspicuous. Cystea *Sm. E. Fl.* Cyathea *E. B.* t. 1587:—*β. dentata;* fronds bipinnate, pinnæ ovato-lanceolate, pinnules ovate-obtuse bluntly and unequally toothed rarely pinnatifid. C. dentata *Hook. Br. Fl.* ed. 5, p. 441. Cyathea *E. B.* t. 1588. Cystea angustata *Sm.: E. Fl.* Pol. Rhæticum *Dicks.* Cyathea fragilis β. *Sm.* — *γ. Dickieana;* pinnæ and pinnules much broader and overlapping each other. C. Dickieana; *Sim. Gard. Journ.* p. 308.; *Newm. Brit. Ferns*, ed. 3. p. 93. with wood-cut.

Rocks and walls, in the mountainous parts of G. Britain.—*β.* more abundant in England and Wales. — *γ.* Sea-cave near Aberdeen. *Dr. Dickie.*

2. C. *alpína* Desv. (*laciniate B.*); fronds tripinnate, pinnules confluent ovate-oblong pinnatifid rather spreading, the segments broadly and shortly linear obtuse, with 2 or 3 blunt erect teeth, rachis winged. Aspidium *Sw.* Cystea regia *Sm.: E. Fl.* (*excl. the alpine stations*). Cyathea incisa *E. B.* t. 163.

On a wall (since destroyed) at Low Layton, Essex, plentiful. — Having received authentic specimens of the Layton plant from Mr. E. Forster, and compared them with Continental ones, and with figures and descriptions of *Aspidium alpinum* Sw., especially the plates of Jacquin and Schkuhr, we can, without hesitation, pronounce them identical.

3. C. *montána* Link (*Mountain B.*); fronds triangular short on a long slender stipes tripinnate, pinnæ and pinnules spreading, ultimate pinnules narrow-oblong inciso-dentate or pinnatifid, the segments toothed at the apex, rachis not winged, involucre subrotund very obtuse. *Hook. Sp. Fil.* 1. p. 200. Aspidium *Sw.*; *Schkh. Fil.* t. 63.

Braedalbane mountains. Ben Lawers; Meal Cuachlar. Well distinguished by its triangular, very compound fronds, and long stipes.

7. Aspléniuм *Linn.* Spleenwort. (Tab. X. f. 2.)

Sori oblong or linear. *Involucres* of the same shape, arising from the lateral veins and opening on one side longitudinally towards the central nerve or midrib. — Veins forked in the British species. — Name: *α, not*, and σπλην, the *spleen*, the plant

having been supposed useful in removing obstructions of the viscera.

1. A. *septentrionále* Hull (*forked S.*); fronds bifid, segments linear acutely laciniate-dentate. *E. B.* t. 1017. Acrostichum *L.*

Clefts of rocks, in mountainous parts of the north. Caernarvonshire; near Llyn-y-Cwn, N. Wales. On Ingleborough and at Ambleside. Arthur's Seat, Edinburgh, plentiful; Stenton rock near Dunkeld.

2. A. *alternifólium* Wulf. (*alternate-leaved S.*); fronds pinnate, pinnæ alternate lanceolate-cuneate toothed at the apex lower ones trifid and toothed, involucre entire. *E. B.* t. 2258. A. Germanicum *Willd.*

Rocks, very rare. Near Kelso; Stenton rock, near Dunkeld; 3 m. from Dunfermline. Kyloe Crags, Northumberland; Borrowdale. Caernarvonshire.

3. A. *Rúta murária* L. (*Wall-rue S.*); fronds bipinnate, especially below, pinnules obovate-cuneate lobed or bluntly toothed, involucre jagged at the margin. *E. B.* t. 150.

Walls and fissures of rocks, frequent. — More compound than the three following species, but with the habit of the two preceding.

4. A. *Trichómanes* L. (*common Wall S.*); fronds pinnate, pinnæ roundish-oblong obtuse crenate truncate-cuneate at the base (stipes and rachis black). *E. B.* t. 576.

Rocks and walls, common.

5. A. *víride* Huds. (*green S.*); fronds pinnate, pinnæ roundish-ovate obtusely serrate cuneate at the base (rachis green). *E. B.* t. 2257.

Moist rocks, N. of England, Wales, and Scotland. Frequent in the Highlands.

6. A. *marínum* L. (*Sea S.*); fronds pinnate, pinnæ oblong obtuse incise-serrate, the superior base rounded and sub-auriculate the inferior one truncate. *E. B.* t. 392.

In clefts and caves of rocks on the sea-coast; not unfrequent, especially in the north.

7. A. *lanceolátum* Huds. (*green lanceolate S.*); fronds lanceolate and bipinnate, pinnules obovate attenuate at the base deeply and sharply serrate, those of the lower pinnæ somewhat lobed, principal rachis not winged, sori at length confluent. *E. B.* t. 240.

Rocks, very rare. Jersey; Cornwall; Tunbridge; on Adderbury Church, Oxfordshire (no longer found there); Barmouth; Stapleton, Bristol. Tremadoc and Pwllheli, N. Wales. — Allied to the following, but distinguishable by the above-mentioned characters.

8. A. *Adiántum nígrum L.* (*black-stalked S.*); fronds ovate or deltoid tripinnate below, pinnules ovate-lanceolate inciso-pinnatifid toothed, principal rachis winged, sori at length confluent. *E. B.* t. 1950.

Banks and fissures of rocks, common. — *Stipes* purplish-black, as in the preceding species. A *var.*, with linear pinnules, is found by Mr. W. Wilson in Ireland, at Mucruss by Mr. Mackay.

9. A. *Filix fœmina* Bernh. (*short-fruited S.*); fronds broadly lanceolate-bipinnate, pinnules linear-oblong acute, often drooping incise-serrate, serratures bi-tridentate acute, lower one at the upper margin large auricled, sori oblong at length arched at the base. Aspidium *Sw.*: *E. B.* t. 1459 (*not good*). Athyrium *Roth.* Aspidium irriguum *E. B.* t. 2199.—*β. latifolium*; flaccid, pinnules crowded ovate, main rachis compressed, partial rachis winged. Athyrium.

Moist shady places, abundant.—*β.* near Keswick, Cumberland. — The *sori* are shorter than in other British *Asplenia*, characteristic of *Athyrium* Roth. — Mr. Newman and Mr. Babington have a var. *molle* (Athyrium molle, *Roth*). from a sea-cave, Aberdeen; but if the specimen we received from Mr. Moore from that same locality (cultivated indeed) be the same, we do not see how it differs from our *var. β. latifolium.* We should probably have been of the same opinion, only that, among our numerous specimens of *A. Filix fœmina*, we find intermediate states; one from Awatschaka Bay, Kamtschatka; another from Crete (Heldreich), "*Athyrium nov. sp.*" The authors above mentioned have a var. *convexum*; which appears to us to be a common state of our *α.* — This plant would appear to grow in very wet shady places, and to be altered in consequence. Mr. Newman gives a faithful representation of a curious monstrosity of *A. Filix fœmina* (Brit. Ferns, p. 248.) with very changed fronds, the main and partial rachis divided at the extremity in a corymbose manner: it retains its peculiarities in cultivation.

10. A. *fontanum* Br. (*smooth Rock S.*); fronds linear-lanceolate bipinnate, pinnules obovate-cuneate (small) with few large deep and sharp teeth, principal and partial rachis winged throughout. Aspidium *Sw.*: *E. B.* t. 2024. A. Halleri *Willd.* Athyrium font *Presl.*

Walls and rocks, very rare. Furze Down, Tooting common; between Tan-y-Bwlch and Tremaddock; Swanage Cave, near Tillavilly, Isle of Purbeck, Dorsetshire; Petersfield, Hants. — It appears that Hudson's plant, usually referred here, was *Cystopteris fragilis.* — A very distinct and handsome little species.

8. Scolopéndrium *Sw.* Hart's-Tongue. (Tab. X. f. 3.)

Sori linear, transverse, on lateral nerves. *Involucre* double, occupying both sides of the sorus, opening, as it were, by a longitudinal suture.—Veins *forked* — Named from the lines of fructification resembling the feet of a *Scolopendra.*

1. S. *vulgáre* Sym. (*common H.*); fronds simple oblong-ligulate acute heart-shaped at the base, stipes scaly. *E. B.* t. 1150. S. officinarum *Sw.* Asplenium Scolopendrium *L.*

Shady banks, cold and damp situations. — In the moat at Kenilworth Castle we have gathered this handsome fern more than 2 feet long.

9. Ptéris *Linn.* Brake. (Tab X. f. 4.)

Sori continuous, linear, marginal. *Involucres*, formed of the *reflexed* margin of the frond, frequently dilated iuto a membrane, opening internally.—Veins *forked in the British species.* —Name: πτερις, in Greek, a *fern*; from πτερυξ, a *plume*, or *feather.*

1. P. *aquilína* L. (*common B.*); fronds tripartite, branches bipinnate, pinnules linear-lanceolate superior undivided inferior pinnatifid, the segments oblong obtuse. *E. B.* t. 1679.

Woods, heaths, and stony or sandy soils; abundant. This is the favourite haunt of the deer: —

"The wild buck bells (bellows) from ferny *brake.*"

It is employed for thatching houses, and as litter for cattle. The ashes are useful in the manufacture of soap and glass. Its astringent quality has recommended it for dressing and preparing kid and chamois leather, and the people in Scotland employ it as a vermifuge.

10. Cryptográmma *Br.* Rock-brake. (Tab. X. f. 5.)

Sori at length confluent and marginal. *Involucre* formed by the revolute margins of the pinnules, which in a young state meet at the back: *partial* none.—Veins *forked.*—Name: κρυπτος, *concealed*, and γραμμη, a *line*; from the concealed lines of capsules.

1. C. *crispa* Br. (*curled R.*); sterile fronds bipinnate, pinnules bi-tripinnatifid, segments linear-oblong often bidentate at the extremity, fertile fronds bipinnate tripinnate below, pinnules linear-oblong rather obtuse entire narrow at the base.—Pteris crispa *L.*: *E. B.* t. 1160. Allosorus *Bernh.*

Among loose stones in mountainous countries in the north: more abundant in the north-west of England than in Scotland. — A very elegant Fern, properly distinguished by Mr. Brown from *Pteris*, differing in habit, even more than in generic character.

11. Blechnum *Linn.* Hard-fern. (Tab. X. f. 6.)

Sori linear, longitudinal, contiguous, parallel one on each side of the rib. *Involucre* continuous, opening interiorly.—Veins *forked.*—Name: βληχνον, another Greek name for a *fern.*

1. B. *boréale* Sw. (*Northern H.*); sterile fronds pectinato-pinnatifid the segments lanceolate rather obtuse, fertile fronds

pinnate, pinnæ linear acuminate. *E. B.* t. 1159. Lomaria Spicant *Desv.*

Woods and heaths, abundant; especially in a poor light soil. — Mr. Brown (*Prodr.* p. 152) suggested that this plant might probably be referred to *Lomaria* (his *Stegania*), with which indeed it entirely agrees in habit, and other botanists have unhesitatingly placed it there. But if the young fertile fronds be examined, it will be evident that the involucre is by no means *marginal;* for there is a considerable space of frond between it and the margin.

12. ADIÁNTUM *Linn.* Maiden-hair. (Tab. X. f. 7.)

Sori oblong or roundish. *Involucres* membranaceous, arising from distinct portions of the margin of the frond turned in, opening interiorly.—Veins *forked in the British species.*—Name: *ἀδιαντος*, that which is of a *dry nature.*

1. A. *Capillus Véneris* L. (*true M.*); frond bipinnate, pinnules thin membranaceous obovate-cuneate inciso-sublobate, segments of the fertile pinnules terminated by a linear-oblong sorus, sterile ones serrate. *E. B.* t. 1564.

Moist rocks and walls, especially near the sea, rare. Near St. Ives, Barry Island and Port Kirig, Glamorgan. Ilfracombe. Between Douglas and Peel, Isle of Man. By the Carron, Kincardineshire. South Isles of Arran, Galway, Ireland. — A most delicate and graceful fern, very abundant in the south of Europe, where we have seen it lining the inside of wells, as it does the basin of the fountain at Vaucluse, with a tapestry of the tenderest green.

B. *Capsules opening irregularly, placed on a receptacle at the margin of the frond and terminating a vein; the ring horizontal. — Cellular tissue lax.* TRICHOMANIDEÆ. (Gen. 12, 13.)

13. TRICHÓMANES *Linn.* Bristle-fern. (Tab. X. f. 8.)

Sori marginal. *Capsules* upon an elongated receptacle, within a cylindrical, or suburceolate, monophyllous *involucre*, which is of the same texture as the frond, opening above. Veins *forked.* — Name: an ancient Greek word, supposed, from the description of Dioscorides, to be applied to the *Asplenium Trichomanes* of Linnæus.

1. T. *radicans* Sw. (*rooting B.*); fronds 3—4-pinnatifid glabrous, segments linear entire or bifid obtuse, involucres solitary in the axils of the upper segments margined cylindrical, the mouth scarcely 2-lipped shorter than the more or less elongated receptacle. T. brevisetum *Bor.* Hymenophyllum alatum *E. B.* t. 1417. Hymenophyllum Tunbridgense *β. Fl. Brit.*

Wet rocks in mountainous countries, rare. Near Bingley, Yorkshire. Powerscourt, and near the cascade at the foot of Turk Mountain, Killarney; Hermitage Glen, Wicklow.—This rare and beautiful Fern, together with the species of the following genus, have a habit very different from the rest of our ferns, and belong to a group which abounds in the tropics. Their *fronds* are membranous and elegantly reticulated, and their depressed sessile *capsules* have a jointed *ring* which completely surrounds them transversely, and they are fixed at a distance from the ring to the *receptacle*. For the numerous synonyms of this species, see *Hook. Sp. Fil.* i. p. 125 A narrower and elongated form, with very copious fructifications, and generally longer receptacles, is found by W. Andrews, Esq., at Inveragh, Ireland; the var. *Andrewsii* of Newm. Brit. Ferns, ed. 3., p. 292.

14. Hymenophýllum *Sm.* Filmy-fern. (Tab. XI. f. 1.)

Sori marginal. *Capsules* upon a narrow receptacle, within a 2-valved *involucre* which is of the same texture as the frond, opening above. — Veins *forked*. — Named from ὑμην, ὑμηνος, a *membrane*, and φυλλον, a *leaf;* an admirably characteristic appellation.

1. H. *Tunbridgénse* Sm. (*Tunbridge F.*); fronds tender pinnate, pinnæ distichous vertical pinnatifid the segments linear undivided or bifid and as well as the axillary solitary suborbicular compressed involucre spinulose-serrate, rachis strongly winged. *E. B.* t. 162.

Moist rocks among moss, in mountainous countries. First found at Tunbridge. Abundant in the north-west of England and in Wales and many parts of Ireland. Banks of the Clyde; Luss; Arran. — Habit tender and delicate. *Pinnæ* pointing in two opposite directions, flat and vertical, on the same plane with the winged *rachis*. *Involucres* nearly orbicular, slightly swollen at the base, where the cluster of *capsules* is lodged, the rest compressed, especially at the margin of the valves. When dry there is a degree of elasticity in the plant.

2. H. *Wilsóni* Hook. (*Scottish F.*); fronds rigid pinnate, pinnæ recurved subunilateral wedge-shaped and 4—6-lobed, the segments linear undivided or bifid spinulose-serrate, involucres axillary solitary ovate inflated entire, rachis only slightly margined towards the extremity. *Wils. in E. B. S.* t. 2686.

Wet rocks. North of England and Wales. High granite rock, near Bodmin, Cornwall. Abundant in the Highlands, especially in the west of Scotland, and in many parts of Ireland. — More rigid, and with larger reticulations than the last: quite distinct in its mode of growth, for all the *pinnæ* are strongly curved backwards, in a direction contrary to that of the fructification: the *involucre* is totally different, larger, browner, of a more rigid texture, truly ovate, each valve remarkably convex for its whole length, the edges only of the valves being applied to each other, and they are quite entire. — This is probably the *H. unilaterale* of Willd. *Sp. Pl.* 5. p. 521., a native of Bourbon; but we have seen no authentic specimen to confirm the opinion.

Ord. CIX. OSMUNDACEÆ *R. Br.* (Tab. XI. f. 2.)

Capsules clustered on the margin of a transformed frond, with an obscure ring, reticulated and pellucid, opening by two regular valves. *Fronds* circinnate in æstivation.

1. Osmúnda *Linn.* Osmund-royal *or* Flowering-fern. (Tab. XI. f. 2.)

Capsules subglobose, pedicellate, clustered, striate, half 2-valved. *Involucre* none. — Veins *forked.* — Name: probably given, as Sir J. E. Smith suggests, in honour of some person: *Osmund*, in Saxon, signifies *domestic peace;* from os, *house*, and mund, *peace*. Linnæus derives it from *Osmundare*, *to wash the mouth*, but why is not obvious.

1. O. *regális* L. (*common O.*, or *Flowering-fern*); fronds bipinnate, pinnules oblong nearly entire the lower base somewhat auricled, the inferior ones opposite, fertile panicle bipinnate occupying the extremity of the frond. *E. B.* t. 209.

Boggy places, wet margins of woods. Very frequent in the W. of Scotland, and S. of Ireland. — The noblest and most striking of our ferns. Mr. Stewart Murray measured a tuft of its *fronds* on the banks of the Clyde, which from the base, where they sprung from the ground, were 11½ feet high.

Ord. CX. OPHIOGLOSSACEÆ *R. Brown.* (Tab. XI. f. 3, 4.)

Capsules arranged on the margin of a contracted frond, sessile without reticulations or a ring, coriaceous, opaque. *Fronds* straight in æstivation. (Gen. 15, 16.)

1. Ophioglossum. Capsules connate on a 1-celled 2 ranked spike.
2. Botrychium. Capsules arranged on one side of a pinnated rachis.

1. Ophioglóssum *Linn.* Adder's-tongue. (Tab. XI. f. 4.)

Spike peduncled; *peduncle* arising from the base of the sterile frond.—*Capsules* 1-celled, 2-valved, opening transversely, connate, forming a compact 2-ranked *spike*. *Involucre* none. — Veins *reticulated*. — Name,—οφις, οφιος, a *serpent*, and γλωσσα, a *tongue*, which the spike of fructification somewhat resembles.

1. O. *vulgátum* L. (*common A.*). *α. ovatum;* frond ovate obtuse. *E. B.* t. 108. — *β. Lusitanicum;* small, frond linear-lanceolate or oblong. O. Lusitanicum, L. *Hook. et Grev. Ic. Fil.* t. 80. *Newm. Brit. Ferns*, ed. 3. p. 331, with wood-cut.

Moist pastures and in woods. β. Petit Port Bay, Guernsey, among furze bushes. *Mr. Wolsey.* — In removing the curious *Rhizoglossum Bergianum*, *Ophioderma pendulum*, and *Chenoglossa palmata*, from *Ophioglossum*, as Endlicher and Presl have done, we still leave 25 species *described* in books, belonging to the present genus. It may startle our readers to learn that Dr. Hooker has recently[1], by a single stroke of the pen, reduced all these to one, namely, *O. vulgatum* L.; and although one of us has been instrumental in creating some of these very species, we are ready, after a careful examination of the great series of specimens in our own Herbarium, from different parts of the world, to acknowledge the correctness of this view. — We find all intermediate gradations from the largest and broadest cordate or ovate sterile fronds to a narrow linear-lanceolate form not ½ an inch long.

2. Botrychium *Sw.* Moonwort. (Tab. XI. f. 3.)

Capsules subglobose, sessile, clustered at the margin and on one side of a pinnated rachis, 1-celled, 2-valved, compressed, opening transversely. *Involucre* none.—Veins *forked.*—Name: βοτρυς, a *bunch of grapes*; from the appearance of the branched clusters of capsules.

1. B. *Lunária* Sw. (*common M.*); frond pinnate usually solitary, pinnæ lunate or subflabelliform crenate. Osmunda *L.*: *E. B.* t. 318.

Dry mountain pastures. — Varieties of this are found, with more than one *frond* upon a stalk, and with the *pinnules* laciniate and even pinnatifid. Smith, in E. Bot., gives β. *Lunaria minor ramosa*, Raii Syn. p. 129., and L. *minor*, *foliis dissectis*, Raii Syn. l. c.; —the latter he refers to *B. rutaceum*, Sw.; a continental plant well figured in Schkuhr Fil. p. 155. f. b. We have not ourselves seen any British *Botrychium* resembling that figure; but a woodcut of a supposed *B. rutaceum*, from the sands of Barry, is given by Mr. Newman, *Brit. Ferns*, ed. 3. p. 324., very much resembling this; and we possess the same from Canada and the United States, — the *B. simplex* of Hitchcock in *Silliman's Journal*, and *Hook.* and *Grev. Ic. Fil.* t. 82; nor should we be surprised if this were found to pass into the larger-fronded German *B. rutaceum* figured by Mr. Newman, l. c. p. 322; and they may all yet be mere forms of *B. Lunaria.* Captain Carmichael communicated specimens to us, which bore *capsules* on the margins of their lower pinnules.

Ord. CXI. LYCOPODIACEÆ *Sw.* (Tab. XII. f. 1.)

Fructification sessile, in the axils of leaves or bracteas. *Capsules* without a ring, 2—3-valved. Æstivation straight (not circinnate).

[1] See Botany of the Antarctic Voyage, Part II. Flora of New Zealand, vol. ii. p. 49.

1. Lycopódium *Linn.* Club-moss. (Tab. XII. f. 1.)

Capsules 1-celled; some 2-valved, including a fine powdery substance (Tab. XII. f. 1. *c*, *d*, *e.*), others 3-valved, containing a few large *grains* or *seeds* (Tab. XII. f. 1. *f*, *g*, *h.*).—Named from λυκος a *wolf*, and πους, ποδος, a *foot*, which the branches of some species are supposed to resemble.

1. L. *clavátum* L. (*common C.*); spikes in pairs cylindrical stalked, their scales ovate acuminate eroso-dentate, stem creeping, branches ascending, leaves scattered incurved and hair-pointed. *E. B.* t. 224.

Heathy pastures, especially in mountainous countries. — The *seeds*, being inflammable, are used to produce artificial lightning on the stage; and the Poles make a decoction of the plant to cure that terrible disease, the *plica polonica*. *Stems* many feet long.

2. L. *annótinum* L. (*interrupted C.*); spikes oblong-cylindrical solitary sessile terminal, stem creeping, branches ascending dichotomous, branchlets simple, leaves in about 5 rows linear-lanceolate mucronate serrulate patent. *E. B.* t. 1727.

Stony mountains of North Wales, in Cumberland, and in the Highlands of Scotland. Not unfrequent on the Cairngorm range.

3. L. *inundátum* L. (*Marsh C.*); spikes terminal sessile leafy solitary, stem (short) creeping branches simple few, leaves linear scattered acute curved upwards. *E. B.* t. 239.

Moist heathy places; but not very common.

4. L. *selaginoídes* L. (*lesser alpine C.*); spikes terminal solitary sessile, stem creeping, branches few ascending simple, leaves scattered lanceolate subpatent ciliato-denticulate. *E. B.* t. 1148.

Boggy and springy spots, by the sides of mountains in the north; not unfrequent. Sandy coast of Lancashire and Anglesea.

5. L. *alpínum* L. (*Savin-leaved C.*); spikes terminal solitary sessile short cylindrical, stem prostrate, branches dichotomous and fascicled, leaves in 4 rows oblong convex acute appressed. *E. B.* t. 234.

On the more elevated mountains of the north, frequent. — It is used in many countries to dye woollen cloth of a yellow colour.

6. L. *Selágo* L. (*Fir C.*); capsules in the axils of the common leaves (not spiked), stem dichotomously branched erect fastigiate, leaves in about 8 rows linear-lanceolate acuminate entire imbricate rigid. *E. B.* t. 233.

Heathy and stony soils, most abundant in mountainous countries. — Used in the Highlands, instead of alum, to fix colours in dyeing, also as an emetic or cathartic, but it operates violently. The Swedes employ it to destroy lice on swine and other animals.

Ord. CXII. MARSILEACEÆ *R. Br.* (Tab. XII. f. 2, 3.)

Capsules without a ring, within *involucres* that are situated near the root of the plant. Aquatics.

1. Isoetes. Involucres formed by the swollen bases of the leaves.
2. Pilularia. Involucres arising, but distinct from, the base of the leaves.

1. Isoétes *Linn.* Quill-wort. (Tab. XII. f. 2.)

Involucres formed by the swollen base of the leaves, 1-celled. *Seeds* or sporules of two kinds, inserted upon many filiform receptacles.—Named from ισος, *equal* or *alike*, and ετος, *the year*, or *ever-green.*

1. I. *Lacústris* L. (*Europæan Q.*); leaves subulate bluntly 4-angular of 4 longitudinal internally jointed tubes. *E. B.* t. 1084.

Bottoms of lakes in the north of England, Wales and Scotland. — A very singular aquatic; its *fructification* being entirely concealed at the base of the cellular subulate *leaves.* Mr. W. Wilson finds 2 *vars.* in Wales; the one densely tufted, with slender erect leaves; the other solitary, and with broader leaves widely spreading. May not the former be the *I. setacea* of Bosc?

2. Pilulária *Linn.* Pill-wort. (Tab. XII. f. 3.)

Involucres solitary, nearly sessile, globose, coriaceous, 4-celled; each *cell* containing 2 different kinds of bodies, one a membrane containing many minute grains (f. 3. *g.*); the other a solitary grain or capsule (f. 3. *h.*).—Name: *pilula*, a *little pill*, which its fructifications resemble.

1. P. *globulífera* L. (*creeping P.*). *E. B.* t. 521.

Margins of lakes and pools, and in places that are partially overflowed. — *Stems* creeping, long, and entangled. *Leaves* setaceous, erect, 2 or 3 from one point, 4—5 inches long. *Involucres* at the base of the *leaves*, about the size of small peas, brown, downy on the outside.

Ord. CXIII. EQUISETACEÆ *De Cand.* (Tab. XII. f. 4.)

Fructification terminal in *spikes* or *catkins*, consisting of peltate polygonous scales, on the underside of which are from 4—7 *involucres*, which open longitudinally and contain numerous globose bodies enfolded by 4 filaments clavate at their extremities.

1. Equisétum *Linn.* Horse-tail. (Tab. XII. f. 4.)

Character of the Genus the same as that of the Order.—Named from *equus*, a *horse*, and *seta*, a *hair*, or *bristle*; whence the English name *horse-tail.*

* *Fertile stems unbranched, succulent, appearing before the sterile ones, which have whorled branches.*

1. E. *fluviátile* L. (in part) *Sm.* (*great Water H.*); sterile stems with very numerous (about 30) striæ and nearly erect simple branches, stem cylindrical smoothish, sheaths with close small subulate teeth, fertile stems (short) without branches clothed with ample loose sheaths having many subulate 2-ribbed teeth. *E. B.* t. 2022. E. Telmateja *Ehrh.*

Muddy lakes, sides of rivers and pools, frequent. *Fr.* April.—The largest of all our species, its *sterile stems* or *fronds* being 3—4 feet high. — We trust the name *fluviatile* may be preserved to this plant on the following grounds: — It is clear that under that appellation Linnæus intended to include the present fine species, for he expressly quotes — "Equisetum caule non sulcato latissimo, verticillis densissimis," of Haller; and "*E. palustre*, longioribus setis," of Bauhin; both quoted by Ehrhart himself under his *E. Telmateja*: we are, therefore, justified in saying this is Linnæus's *E. fluviatile* "in part." Allowing, therefore, that his Swiss and Lapland specimens are not identical with our *fluviatile*: yet, seeing that they are the same as *E. limosum*, a name equally given by the illustrious Swede and, as we believe, universally adopted, we cannot conceive a rational objection to preserving it for the present plant.

2. E. *umbrósum* Willd. (*blunt-topped H.*); frond very obtuse at the extremity, sterile stem especially upwards scabrous with prominent points and about 20 striæ, teeth of the sheath appressed, branches simple, slender, patent, fertile stem without branches, its sheaths approximate appressed with subulate 1-ribbed teeth, the rib disappearing below the point. C. Drummondi *Hook. Br. Fl.* ed. 1.: *and in E. B. S.* t. 2777.

Scotland, rare; near Forfar, and banks of the Isla and Esk, in Forfarshire, extending up the valleys to their sources; by the Caledonian Canal; Campsie Glen; Bonnington woods, Lanarkshire; Woodcock Dale, Linlithgowshire; Falls of Moness. Near Belfast. *Fr.* April. — Allied to the following species, but unquestionably distinct. Its colour is greener and less glaucous; its *stems* rougher, with closely set raised points; its angles and *branches* much more numerous, and the whole *barren frond* is singularly blunt (in its outline) at the extremity, by which it may at once be known from *E. arvense.* The *sheaths*, though paler at the base, have blacker and more prominent ribs upwards, and they are so close as to imbricate each other: their *teeth* also are more numerous, when they separate into the proper number. In general appearance the sterile plant resembles *E. sylva-*

ticum, from which it is at once distinguished by the simple, not compound branches.

3. E. *arvénse* L. (*Corn H.*); frond attenuated upwards, sterile stem slightly scabrous with 12—14 furrows, teeth of the sheath lanceolate-subulate 1-ribbed to the point, branches simple erecto-patent, fertile stem without branches, its sheaths remote loose. *E. B.* t. 2020.

Corn-fields and road-sides, frequent. *Fr.* April; afterwards the *sterile stems* appear.

** *Fertile stems similar to the sterile ones, simple or branched.*

4. E. *sylváticum* L. (*branched Wood H.*); sterile and fertile stems with about 12 furrows, branches compound whorled deflexed, sheaths lax with about 6 or 12 long membranaceous obtuse teeth, catkin terminal obtuse. *E. B.* t. 1874.

Moist woods, hedge-banks; abundant in the north. *Fr.* April, May. — A graceful species, less rigid and more herbaceous than any of the following. *Stems* annual. *Sterile plants* pyramidal in their outline; *fertile ones* abrupt at the top, especially after the fructification has passed away.

5. E. *limósum* L. (*smooth naked H.*); stems nearly smooth striate, striæ about 16—18, teeth of the sheaths short rigid distinct, branches nearly erect simple whorled often abortive, catkin terminal upon the stem. *E. B.* t. 929.—*α.* stems quite smooth, branches short and rigid nearly equal throughout as long as the internodes, spike nearly sessile. E. limosum *Fries*; *Baker in Phytol.* 4., p. 1056.—*β.* stem somewhat scabrous above, branches long and slender tapering to the point, longer than the internodes, spike stalked. E. fluviatile *Linn.?*; *Fries*; *Baker*, l. c., p. 1056. (*not of Brit. Fl.*)

Marshy watery places and ditches, frequent. *Fr.* June, July. — *Stems* annual. Next in size to our *E. fluviatile*, but very different; it has fewer *angles* and *teeth* and fewer *branches* in a whorl, and these latter are often short and imperfect, or wanting; differing, too, by the *cathins* being upon stems that are similar to the barren ones. Mr. Baker, in Phytol. 4., p. 1118., describes and figures a double row of tubes in the substance of the tubes of the stems in var. *α.*; one row in *β.*

6. E. *palústre* L. (*Marsh H.*); stems deeply furrowed roundish with 4—8 angles, teeth of the sheaths wedge-shaped acute brown at the point and membranaceous at the margin, branches simple whorled gradually shorter upwards (sometimes abortive), catkin terminal obtuse.—*α. vulgare*; stem with 6—8 furrows, branches barren, catkin terminal on the stem. *E. B.* t. 2021.—*β. alpinum*; much smaller, with 4—5 angles and teeth to the sheaths, upper branches abortive, catkin terminal on the stem.

—γ. *polystachyon ;* branches terminating in catkins. *Willd. : Raii Syn.* p. 131. t. 5. f. 3.

Boggy soils, frequent. Stems annual. — β. Boggy places near springs, on the higher parts of the Braedalbane mountains. — γ. Camberwell. *Fr.* June, July.

7. E. *Mackayi* Newm. (*long-stemmed H.*) ; stems perennial very long branched at the base, branches elongated flexuose simple or again irregularly branched towards the apex scabrous furrowed, sheaths at length wholly black with 6—13 narrow subulate teeth, catkins terminal mucronate. *Newm. Brit. Ferns.* p. 15. *cum Ic.* E. elongatum *Hook. Br. Fl.* ed. 5. and *Willd?*

Mountain glens, near Belfast: *F. Whitla, Esq.* and *Dr. Mackay ;* since found elsewhere in the north of Ireland. Bed of the river Dee, Scotland. *Fr.* July. — The stems are perennial, nearly equally rough with the following, but the ramification is very different, as are the teeth of the sheaths. In the absence of any decided authority for this being the true *elongatum* of Willd, we are very willing to adopt Mr. Newman's name after our valued friend, and one of its discoverers in Ireland, Dr. Mackay. If, however, a really distinct species, it is very unlikely that it should not be found on the Continent, and already described there; and we are disposed to think it may prove the *E. ramosum* of Schleich. described by Koch, to which are also referred, by the latter author (Fl. Germ. ed. 2. v. 2. p. 966.), *E. elongatum* W., *E. Pannonicum* W., *E. ramosissimum* Desf., *E. procerum* Pollin., and *E. hyemale* var. *C. elongatum* Doll. Mr. Babington quotes under *E. Mackayi, E. trachyodon* (Braun) Koch?, because, we presume, Koch quotes Mr. Babington *E. Mackayi* with a doubt, under *E. trachyodon.* We cannot solve these doubts. [1]

8. E. *hyemále* L. (*rough H.*); stems perennial, throwing up simple branches only from the base scabrous furrowed, sheaths black at the bottom and top otherwise whitish with about 14 slender often deciduous teeth (black at the extremity), catkin terminal mucronate. *E. B.* t. 915.

Boggy woods, principally in the middle and north of England; in Scotland and Ireland. *Fr.* July, Aug. *Stems* perennial. — Most of the *Horse-tails* are more or less rough to the touch, and their cuticle abounds in *silex* or flinty earth, so that they are admirably suited for the polishing of hard woods, ivory, brass, &c. This species, *E. hyemale,* is by far the best kind for such purposes, and is imported largely from Holland under the name of *Dutch Rushes.*

9. E. *variegátum* Schleich. (*variegated rough H.*); stems

[1] Mr. Newman has, in Phytol. 5. p. 19., proposed to make a new species for a plant found in Wicklow, under the name of *E. Moorei.* It is allied to *E. Mackayi* and *E. hyemale,* but has stems annual erect simple furrowed, sheaths loose, white but black at the base, with about 12 rigid teeth, which are black and truncate at the extremity; catkin terminal sessile, conical at the point. We have seen no specimen.

perennial filiform rough branched only at the base with 4—10 furrows, sheaths green below black above with white membranaceous obtuse bristle-pointed teeth (black at their base), catkin terminal mucronate. *E. B.* t. 1987.

Sandy sea-shores and in water. Sands of Barrie; banks of the Dee. Near Liverpool; Salcombe Cliff, Devon. Portmarnock sands; Mucruss; Dublin canal. *Fr.* July, Aug. — Stems perennial, usually decumbent, 6—8 inches long, slender. Mr. Babington considers his var. β. *arenarium* identical with the *variegatum* of E. B., and he has a var. γ. *Wilsoni* (Newm.), "st. erect tall (3 feet), sheaths with a black ring at the summit; teeth short, obtuse." This was found at Mucrus, by Mr. Wilson, growing in water, and has since been detected in the Dublin canal and on the banks of the Dee.

Note. — The remainder of the Orders of the Class Cryptogamia are given, with their Genera and Species, in the 5th volume of "*English Flora*" (or the 2d. vol. of the former editions of the present work).

LATIN INDEX

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THE END.

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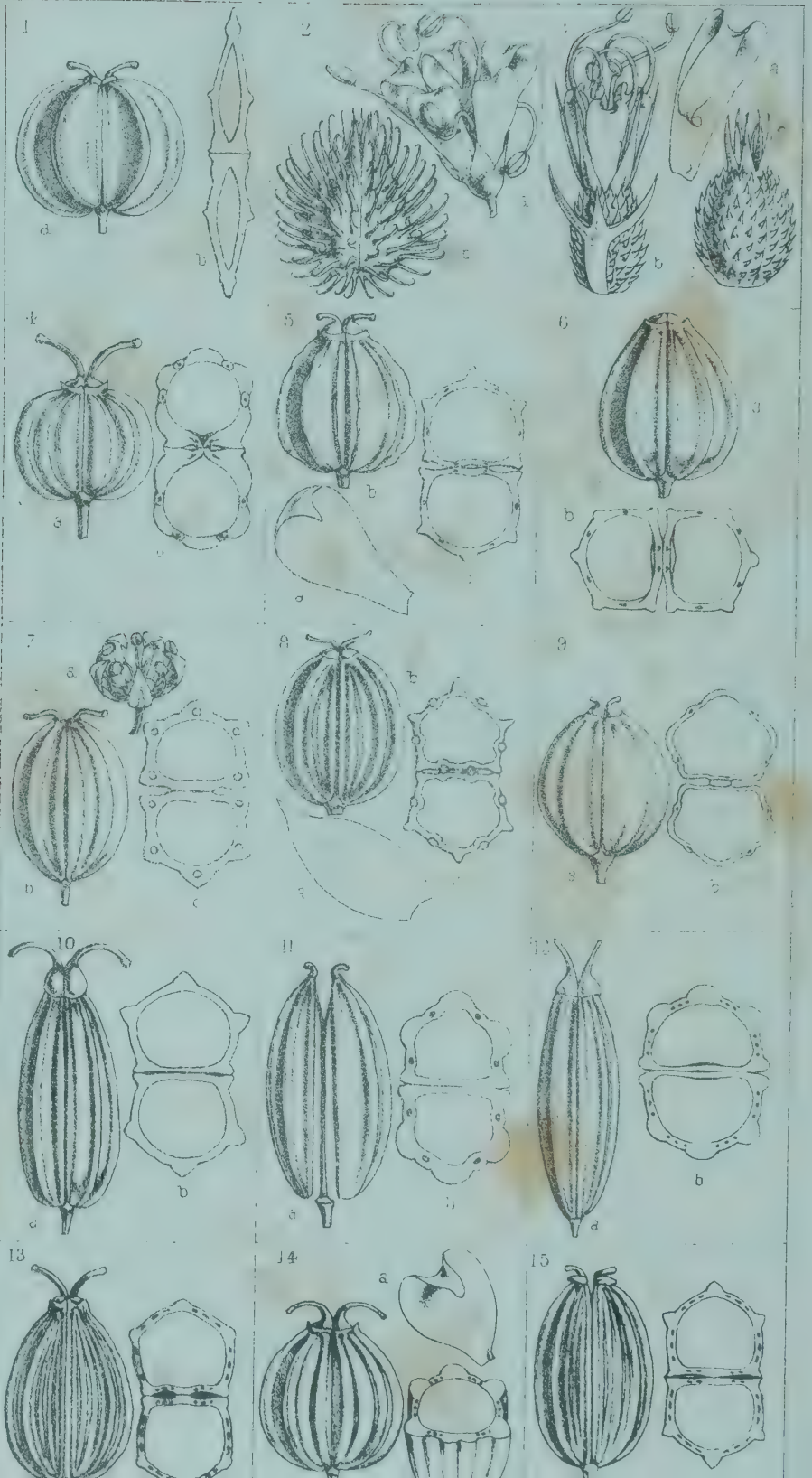
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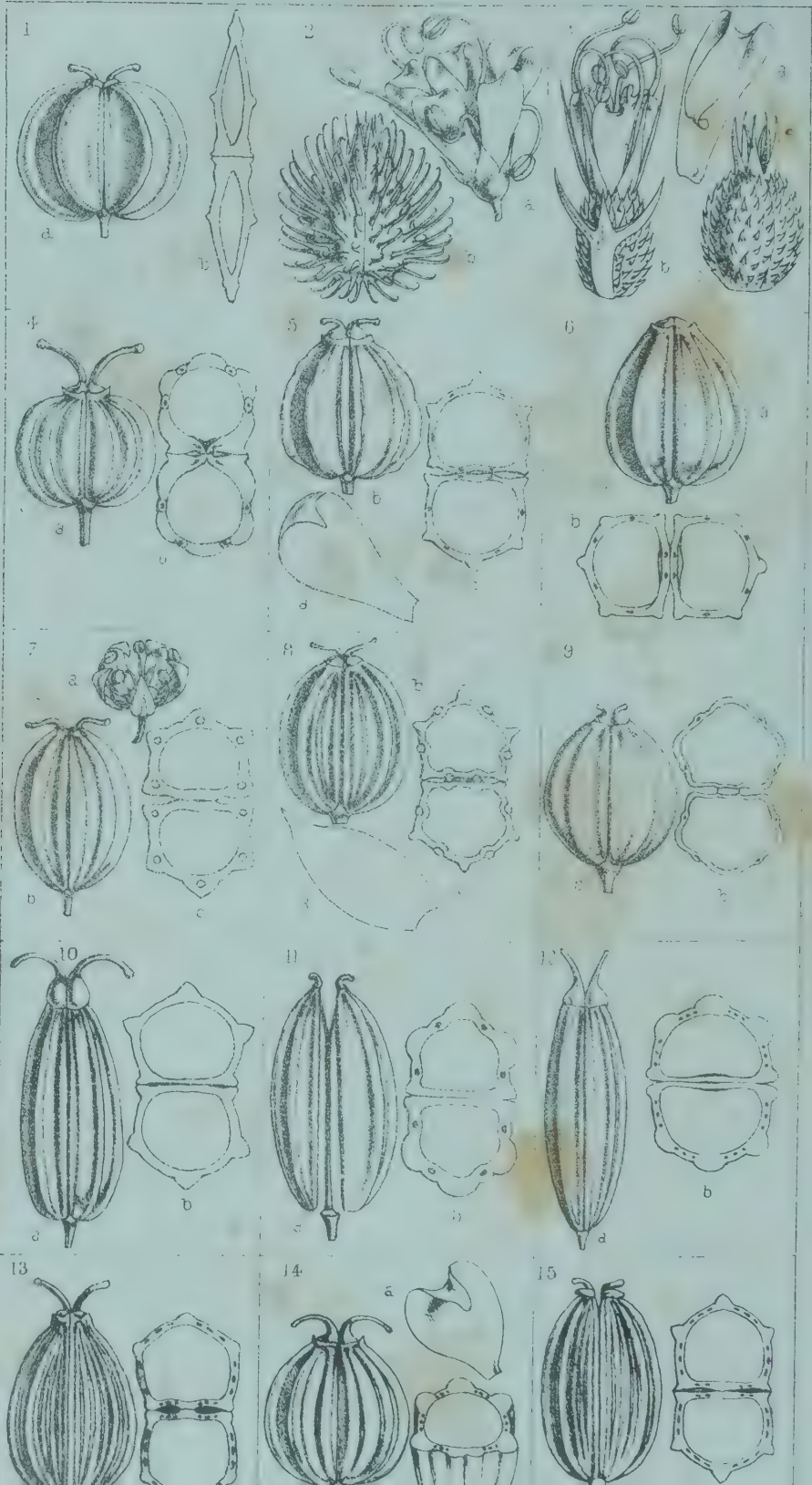
THE BINDER *will observe that these explanations must be placed opposite their respective Plates.*

TAB. I.

UMBELLIFERÆ.

Fig. 1. *a*. Fruit of HYDROCOTYLE.—*b*. Transverse section of the same.
Fig. 2. SANICULA.—*a*. Sterile flower. *b*. Fruit.
Fig. 3. ERYNGIUM.—*a*. Petal. *b*. Flower with a 3-cleft scale at its base. *c*. Fruit.
Fig. 4. CICUTA.—*a*. Fruit. *b*. Transverse section.
Fig. 5. APIUM.—*a*. Petal. *b*. Fruit. *c*. Transverse section.
Fig. 6. PETROSELINUM.—*a*. Fruit. *b*. Transverse section.
Fig. 7. TRINIA.—*a*. Sterile fl. *b*. Fruit. *c*. Transverse section.
Fig. 8. HELOSCIADIUM.—*a*. Petal. *b*. Fruit. *c*. Transverse section.
Fig. 9. SISON.—*a*. Fruit. *b*. Transverse section.
Fig. 10. ÆGOPODIUM.—*a*. Fruit. *b*. Transverse section.
Fig. 11. CARUM.—*a*. Fruit. *b*. Transverse section.
Fig. 12. BUNIUM.—*a*. Fruit. *b*. Transverse section.
Fig. 13. PIMPINELLA.—*a*. Fruit. *b*. Transverse section.
Fig. 14. SIUM.—*a*. Petal. *b*. Fruit. *c*. Transverse section of a single carpel.
Fig. 15. BUPLEURUM.—*a*. Fruit. *b*. Transverse section.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THE BINDER *will observe that these explanations must be placed opposite their respective Plates.*

TAB. I.

UMBELLIFERÆ.

Fig. 1. *a*. Fruit of HYDROCOTYLE.—*b*. Transverse section of the same.
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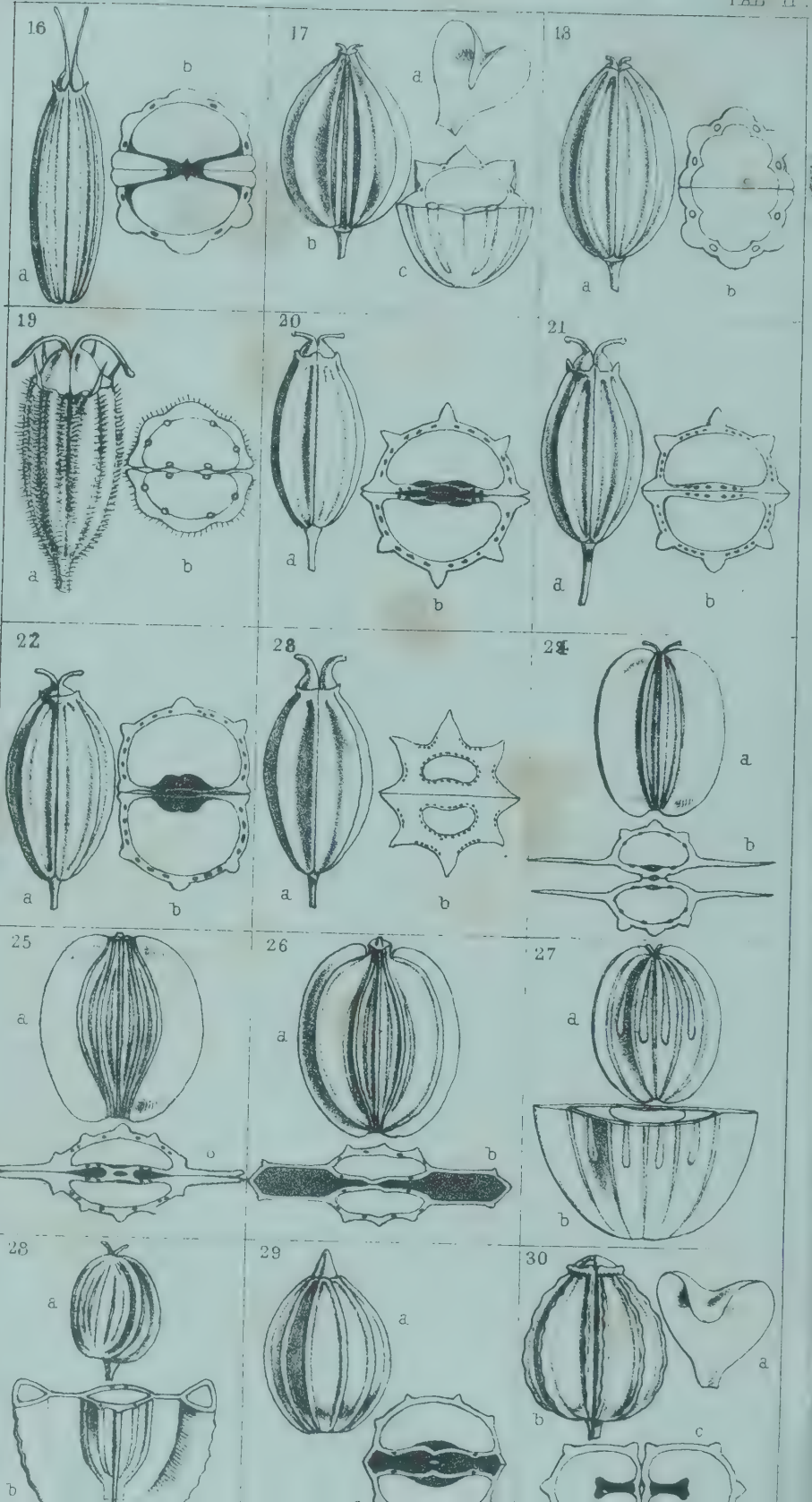
Fig. 6. PETROSELINUM.—*a*. Fruit. *b*. Transverse section.
Fig. 7. TRINIA.—*a*. Sterile fl. *b*. Fruit. *c*. Transverse section.
Fig. 8. HELOSCIADIUM.—*a*. Petal. *b*. Fruit. *c*. Transverse section.
Fig. 9. SISON.—*a*. Fruit. *b*. Transverse section.
Fig. 10. ÆGOPODIUM.—*a*. Fruit. *b*. Transverse section.
Fig. 11. CARUM.—*a*. Fruit. *b*. Transverse section.
Fig. 12. BUNIUM.—*a*. Fruit. *b*. Transverse section.
Fig. 13. PIMPINELLA.—*a*. Fruit. *b*. Transverse section.
Fig. 14. SIUM.—*a*. Petal. *b*. Fruit. *c*. Transverse section of a single carpel.
Fig. 15. BUPLEURUM.—*a*. Fruit. *b*. Transverse section.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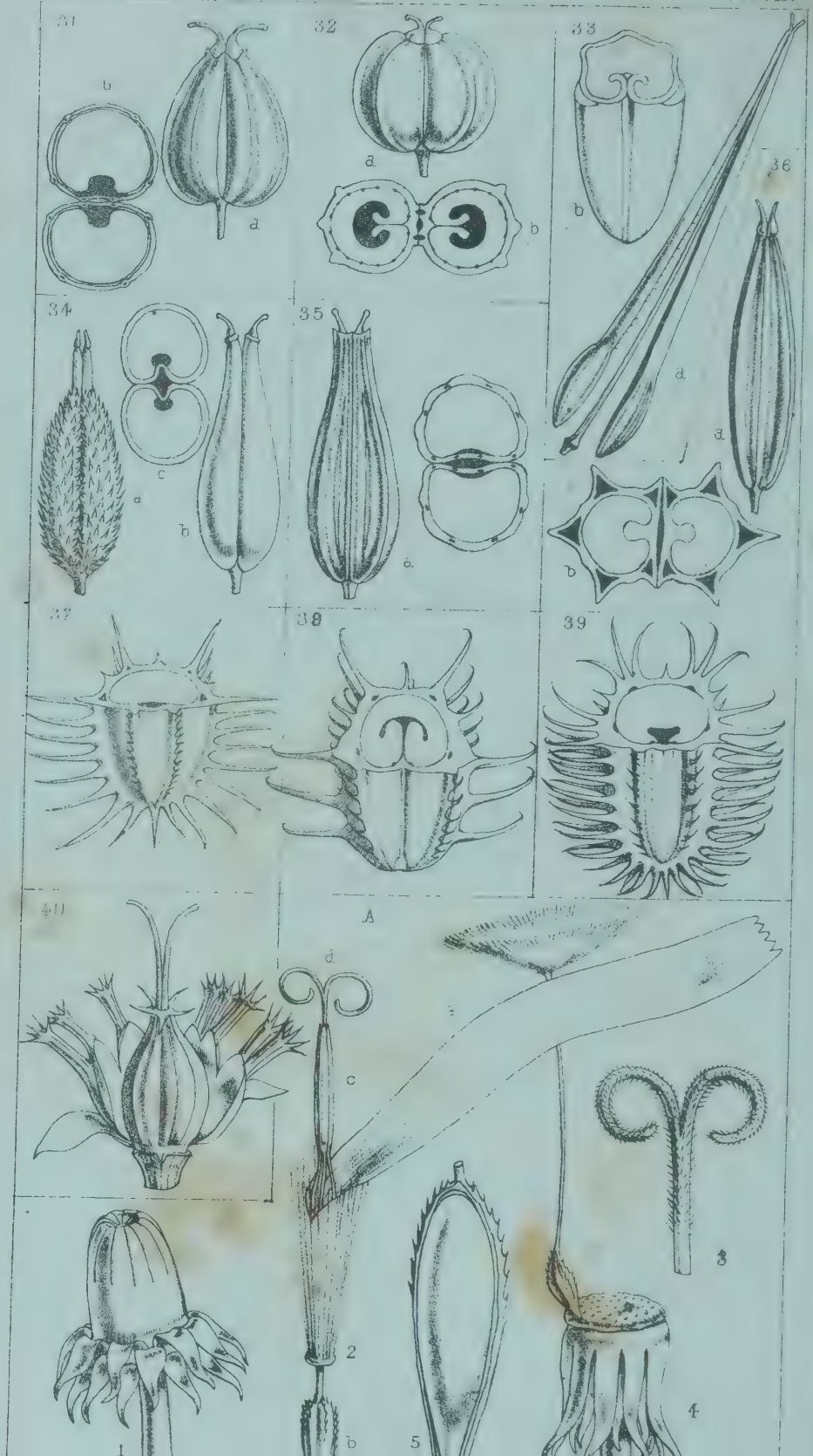
TAB. II.

UMBELLIFERÆ — *continued.*

Fig. 16. ŒNANTHE.—*a.* Fruit. *b.* Transverse section.
Fig. 17. ÆTHUSA.—*a.* Petal. *b.* Fruit. *c.* Transverse section.
Fig. 18. FŒNICULUM.—*a.* Fruit. *b.* Transverse section.
Fig. 19. SESELI.—*a.* Fruit. *b.* Transverse section.
Fig. 20. LIGUSTICUM. *a.* Fruit. *b.* Transverse section.
Fig. 21. SILAUS.—*a.* Fruit. *b.* Transverse section.
Fig. 22. MEUM.—*a.* Fruit. *b.* Transverse section.
Fig. 23. CRITHMUM.—*a.* Fruit. *b.* Transverse section.
Fig. 24. ANGELICA.—*a.* Fruit. *b.* Transverse section.
Fig. 25. PEUCEDANUM.—*a.* Fruit. *b.* Transverse section.
Fig. 26. PASTINACA.—*a.* Fruit. *b.* Transverse section.
Fig. 27. HERACLEUM.—*a.* Fruit. *b.* Transverse section of a single carpel.
Fig. 28. TORDYLIUM.—*a.* Fruit. *b.* Transverse section of a single carpel.
Fig. 29. CORIANDRUM.—*a.* Fruit. *b.* Transverse section.
Fig. 30. CONIUM.—*a.* Petal. *b.* Fruit. *c.* Transverse section.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TAB. III.

UMBELLIFERÆ — *continued.*

Fig. 31. PHYSOSPERMUM.—*a.* Fruit. *b.* Transverse section.
Fig. 32. SMYRNIUM.—*a.* Fruit. *b.* Transverse section.
Fig. 33. SCANDIX.—*a.* Fruit. *b.* Transverse section of a single carpel.
Fig. 34. ANTHRISCUS.—*a. b.* Fruits. *c.* Transverse section.
Fig. 35. CHÆROPHYLLUM.—*a.* Fruit. *b.* Transverse section.
Fig. 36. MYRRHIS.—*a.* Fruit. *b.* Transverse section.
Fig. 37. Transverse section of a single carpel of DAUCUS.
Fig. 38. Do. do. of CAUCALIS.
Fig. 39. Do. do. of TORILIS.
Fig. 40. Fruit of ECHINOPHORA, with its curious prickly receptacle.

COMPOSITÆ.

A. LEONTODON. (For the explanation of these figures, *see* p. 208. foot-note.)

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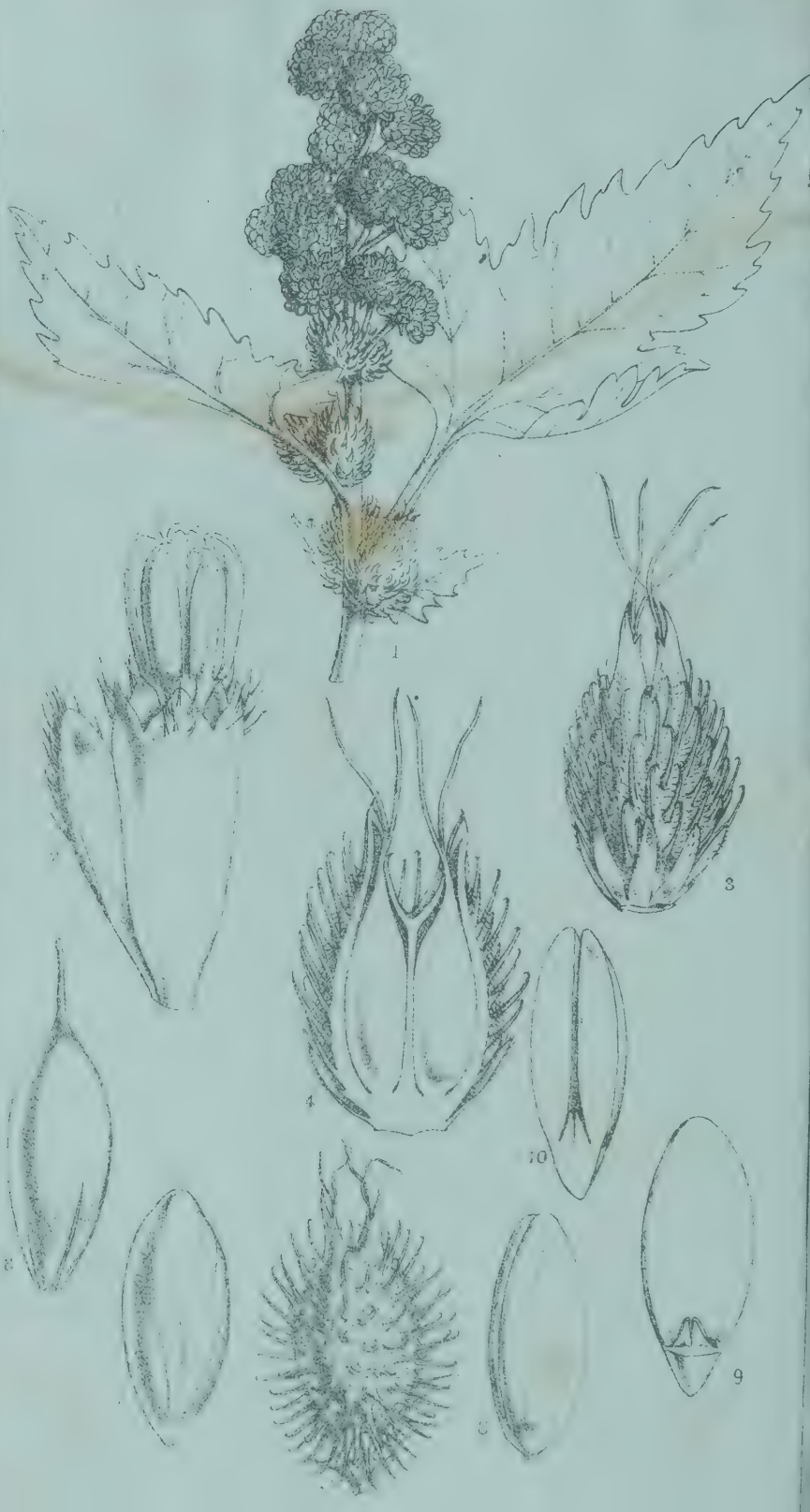
TAB. IV.

COMPOSITÆ — *continued.*

A. CARDUUS.
B. CENTAUREA.
(For the explanation of these figures, see p. 228. foot-note.)
C. DIOTIS.
D. BELLIS.
(For an explanation of these figures, see p. 237. foot-note.)

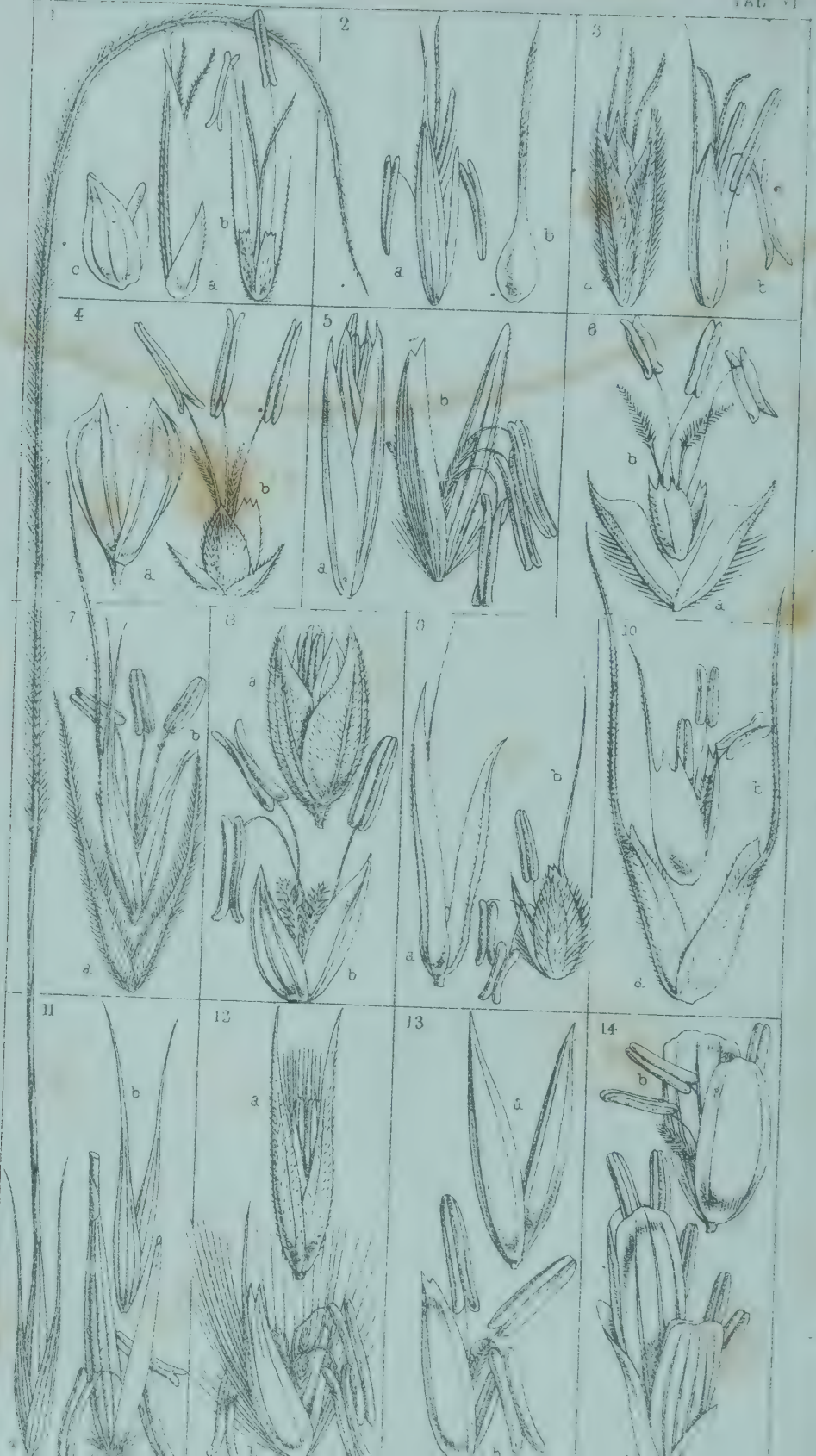


TAB. V.

COMPOSITÆ.

Anomalous Genus.

XANTHIUM. (For the explanation of these figures, see p. 256. foot-note.)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TAB. VI.

GRASSES.

Fig. 1. ANTHOXANTHUM.—*a*. Spikelet. *b*. The same from which the glumes are removed, showing the two neuter glumellas. *c*. The glumellas of the inner awnless and fertile floret.

Fig. 2. NARDUS.—*a*. The two glumellas destitute of glumes. *b*. Pistil with its single style.

Fig. 3. ALOPECURUS.—*a*. Spikelet with its two glumes. *b*. Solitary glumella with its awn.

Fig. 4. PHALARIS.—*a*. Glumes. *b*. Glumellas of the fertile floret with the glumellas of 2 other neuter florets.

Fig. 5. AMMOPHILA.—*a*. Spikelet. *b*. Floret with the tuft of hairs at the base.

Fig. 6. PHLEUM.—*a*. Glumes. *b*. Floret with its 2 glumellas.

Fig. 7. LAGURUS.—*a*. Glumes. *b*. Floret with its glumellas.

Fig. 8. MILIUM.—*a*. Spikelet. *b*. Floret.

Fig. 9. GASTRIDIUM.—*a*. Glumes, swollen at the base. *b*. Floret with its 2 glumellas.

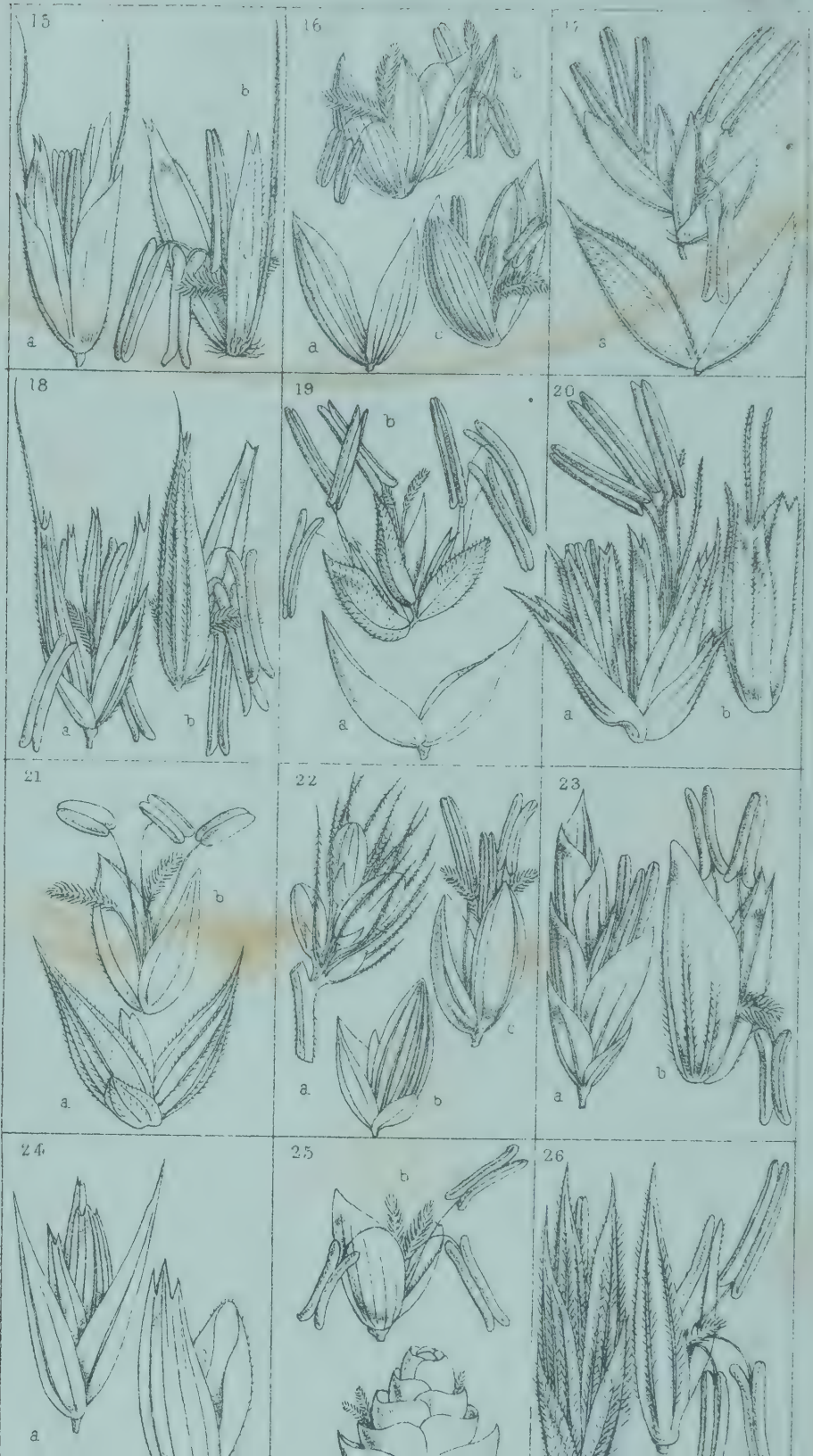
Fig. 10. POLYPOGON.—*a*. Glumes. *b*. Floret with its glumellas.

Fig. 11. STIPA.—*a*. Spikelet with the very long twisted awn terminating the floret. *b*. Glumes. *c*. Glumellas; the long awn being cut away from the outer one.

Fig. 12. CALAMAGROSTIS.—*a*. Spikelet. *b*. Floret, surrounded by hairs at the base.

Fig. 13. AGROSTIS.—*a*. Glumes. *b*. Floret with the glumellas.

Fig. 14. CATABROSA.—*a*. Spikelet. *b*. Floret.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TAB. VII.

GRASSES — *continued.*

Fig. 15. AIRA.—*a.* Spikelet. *b.* Floret.

Fig. 16. MELICA.—*a.* Glumes. *b.* Two florets from the spikelet, with the rudiment of a third floret between them. *c.* One fertile floret from the spikelet with its neuter floret.

Fig. 17. HOLCUS.—*a.* Glumes. *b.* Two florets from the calyx; the upper one with stamens only and awned; the lower one perfect and awnless.

Fig. 18. ARRHENATHERUM.—*a.* Spikelet, with 2 florets, the lowest floret with stamens only, and a long twisted awn; the upper (shown separately at *b.*) perfect, with a short straight awn.

Fig. 19. HIEROCHLOE.—*a.* Glumes. *b.* The 3 florets, of which the two lateral ones have 3 perfect stamens only and no pistil; the middle one perfect, diandrous.

Fig. 20. SESLERIA.—*a.* Spikelet. *b.* Floret.

Fig. 21. PANICUM.—*a.* Unequal glumes with the neuter floret inside the smaller glume. *b.* Fertile floret.

Fig. 22. SETARIA.—*a.* Bristly involucre with the spikelets. *b.* Unequal glumes, with the neuter floret inside the smaller one. *c.* Perfect floret.

Fig. 23. POA.—*a.* Spikelet. *b.* Floret.

Fig. 24. TRIODIA.—*a.* Spikelet. *b.* Glumellas of a floret.

Fig. 25. BRIZA.—*a.* Spikelet. *b.* Floret.

Fig. 26. DACTYLIS.—*a.* Spikelet. *b.* Floret.

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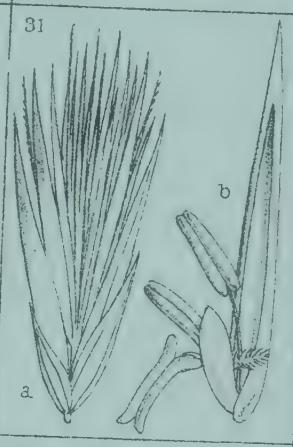
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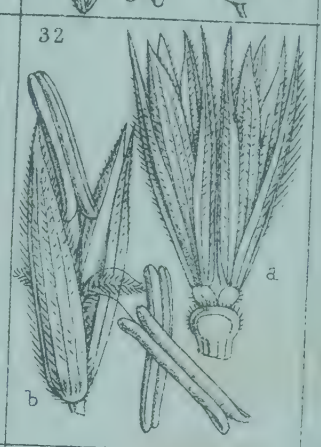
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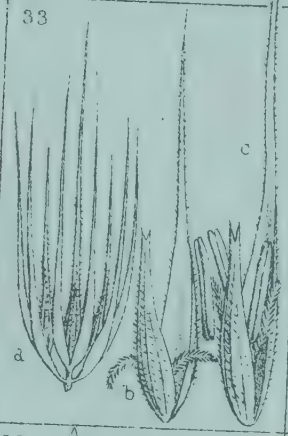
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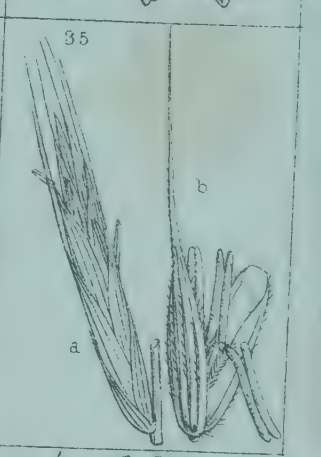
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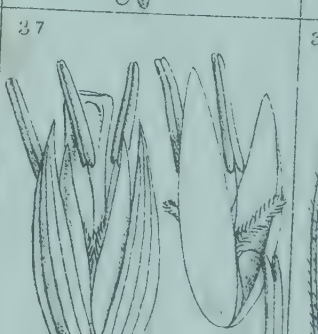
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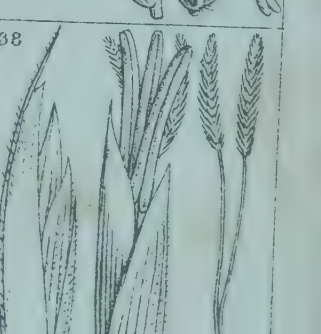
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TAB. VIII.

GRASSES—*continued.*

Fig. 27. CYNOSURUS.—*a.* Spikelet, with the pectinate involucre. *b.* Floret.

Fig. 28. FESTUCA.—*a.* Spikelet. *b.* Floret.

Fig. 29. BROMUS.—*a.* Spikelet. *b.* Floret.

Fig. 30. AVENA.—*a.* Floret. *b.* Spikelet.

Fig. 31. PHRAGMITES.—*a.* Spikelet. *b.* Floret.

Fig. 32. ELYMUS.—*a.* Two spikelets each with 2 florets from the same joint of the rachis. *b.* Floret.

Fig 33. HORDEUM.—*a.* Three spikelets from the same joint of the rachis, each with a single floret. *b.* One of the lateral (sterile) florets. *c.* Central (perfect) one.

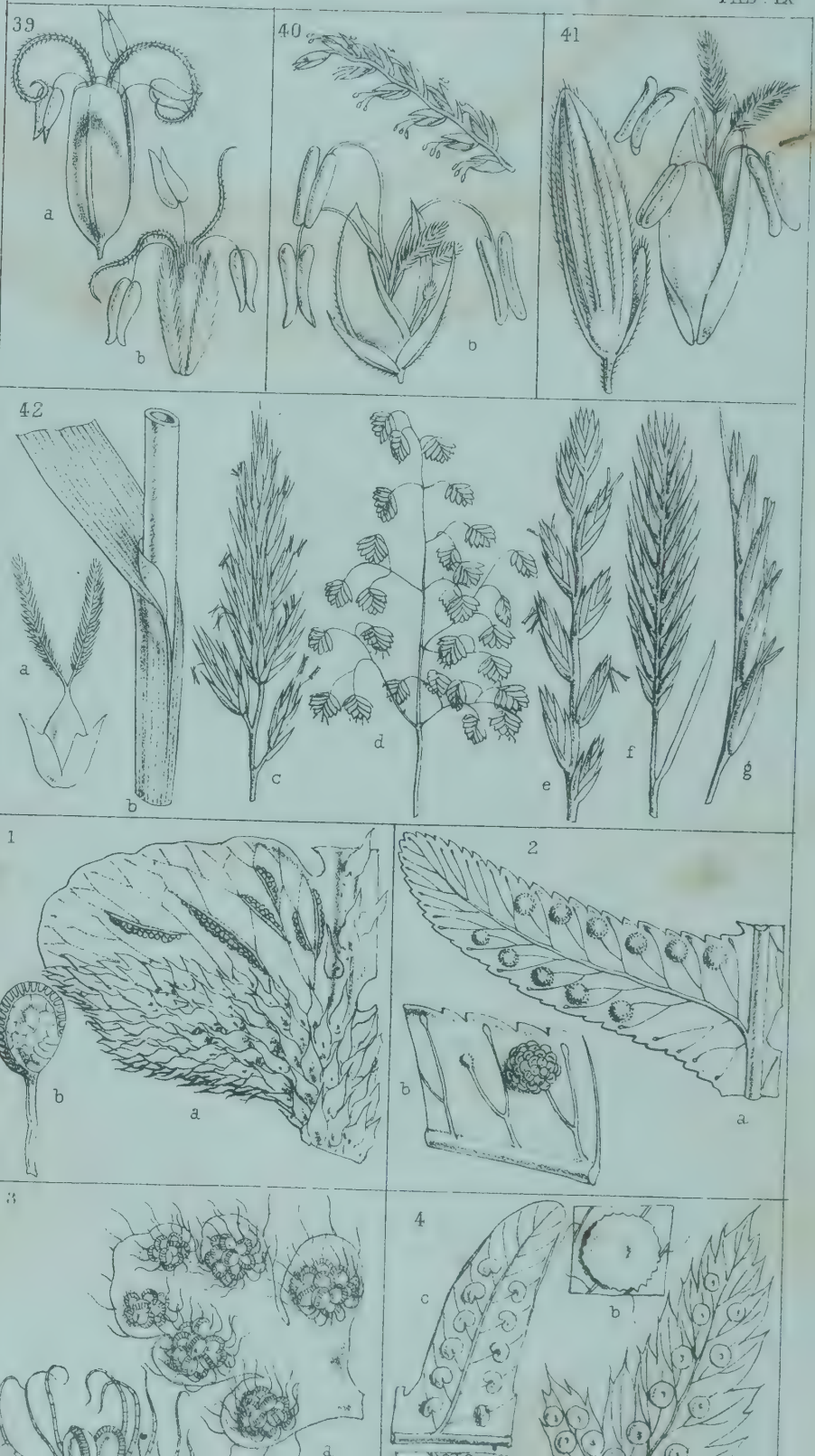
Fig. 34. TRITICUM.—*a.* Two spikelets, one from each joint of the rachis. *b.* Floret.

Fig. 35. BRACHYPODIUM.—*a.* Spikelet. *b.* Floret.

Fig. 36. LOLIUM.—*a.* Spikelet with its single glume. *b.* Floret.

Fig. 37. LEPTURUS.—*a.* Spikelet on the rachis, with the 2 collateral glumes. *b.* Floret.

Fig. 38. SPARTINA.—*a.* Spikelet. *b.* Floret. *c.* Pistil.


39
a
b
40
b
41
42
a
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c
d
e
f
g
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2
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a
3
4
c
b

TAB. IX.

GRASSES — *continued.*

Fig. 39. KNAPPIA.—*a.* Spikelet. *b.* Floret and glumellas.

Fig. 40. CYNODON. — *a.* Portion of a spike. *b.* Spikelet.

Fig. 41. DIGITARIA. — *a.* Spikelet. *b.* Fertile floret and glumellas.

Fig. 42. Pistil of a *grass* with its hypogynous scales. *b.* Portion of the stem of a *grass* with t h *ligule* upon the leaf, and the sheath slit on one side. *c.*—*g.* Examples of the inflorescence of *Grasses.* *c.* Spiked panicle as in *Anthoxanthum.* *d.* Panicle as in *Briza minor.* *e.* Spike, the spikelets distichous, as in *Lolium perenne.* *f.* Spike, the spikelets imbricated on all sides, as in *Triticum cristatum.* *g.* Partial spike unilateral, or with the flowers pointing one way, as in *Spartina stricta.*

FERNS.

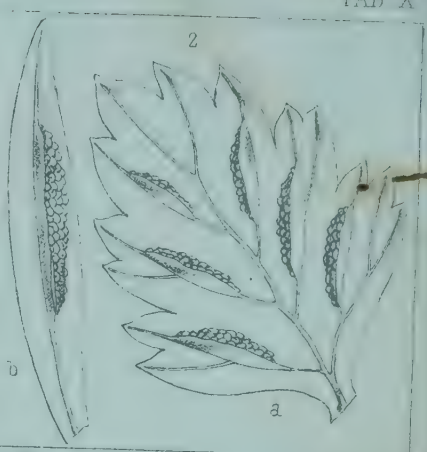
Fig. 1 CETERACH. — *a.* Segment of a frond with part of a scale removed. *b.* Capsule.

Fig. 2. POLYPODIUM. — *a.* Segment of a frond. *b.* Portion of the same.

Fig. 3. WOODSIA. — *a.* Pinna. *b.* Involucre, most of the capsules removed.

Fig. 4. ASPIDIUM. — *a.* Pinna of first division; *b.* Sorus and involucre. — *c.* Pinnæ of second division; *d.* Sorus and involucre.

1
a
b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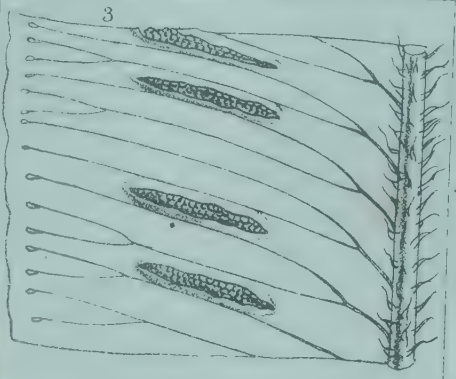
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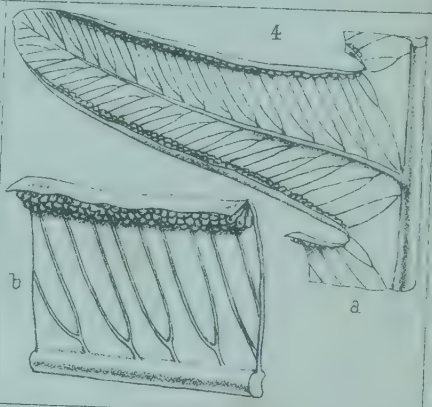
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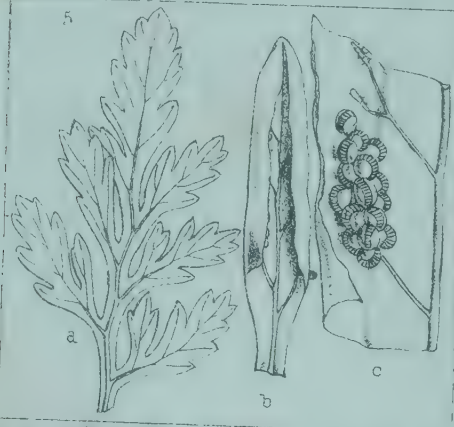
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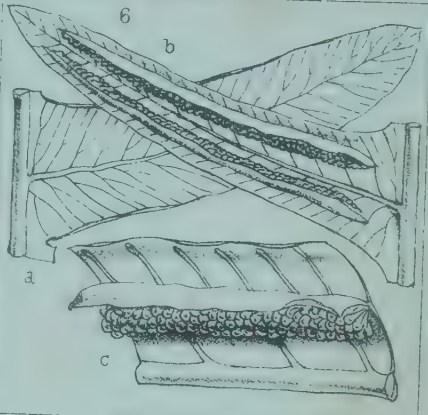
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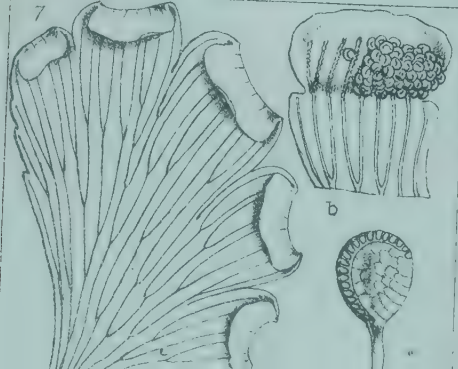
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b

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a

TAB. X.

FERNS — *continued.*

Fig. 1. CYSTOPTERIS. — *a.* Pinna. *b.* Sorus and involucre.

Fig. 2. ASPLENIUM. — *a. b.* Pinnæ.

Fig. 3. SCOLOPENDRIUM. — *a.* Portion of a frond.

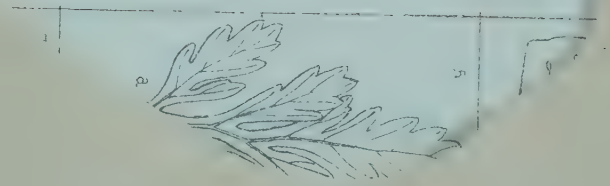
Fig. 4. PTERIS. — *a.* Segment of a frond. *b.* Smaller portion of do.

Fig. 5. CRYPTOGRAMMA. — *a.* Portion of a barren frond. *b.* Portion of a fertile do. *c.* Involucre laid open.

Fig. 6. BLECHNUM. — *a.* Segment of a barren frond. *b.* Do. of a fertile one. *c.* Portion of a sorus and involucre.

Fig. 7. ADIANTUM. — *a.* Pinna. *b.* Sorus; the involucre laid open, and part of the capsules removed. *c.* Capsule.

Fig. 8. TRICHOMANES. — *a.* Portion of a frond. *b.* Involucre laid open. *c. d.* Capsules.



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